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Editor—HENRY E. SIGERIST

Associate Editor—GENEVIEVE MILLER

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HUMANE WARFARE AND INHUMAN WAR:

JAPAN AND ITS TREATMENT OF WAR PRISONERS

ILZA VEITH

I

On January 25, 1946, it was reported from Tokyo that "all of the nine nations to which Japan surrendered—including Russia—will participate in the international trial of Hideki Tojo, his Pearl Harbor Cabinet and other war leaders charged with 'crimes against peace, and against humanity.'" Yet no evidence that may come out during the trials now in process, nor during the international trials, will have the power to surprise the world. Japan has, for too long a time, been a synonym for cruelty and brutality in aggression, warfare, and treatment of prisoners. For the ten years previous to Pearl Harbor Westerners in China and Chinese alike proclaimed it, and the flood of reports from American prisoners of the Japanese removes any doubt as to the veracity of the atrocities which were perpetrated by the Japanese all over the Asiatic Theatre of War. Wherever and whenever these atrocities occurred one can detect a definite pattern, with the obvious purpose of inflicting humiliation and destruction upon the captured white people and the

conquered Asiatics, although in the case of the latter it ran counter to Japan's policy of winning adherents for its co-prosperity sphere.

This pattern of maltreatment for the captured and the conquered enemy is all the more striking because it actually is a comparatively recent development in Japan's warfare. Forty years ago, during the Russo-Japanese War, the general Japanese policy was distinctly different.

II

On February 14, 1904, only a few days after the outbreak of Japan's first war against a non-Asiatic nation, rules were established by imperial decree which took care, in great detail, of any situation that might arise in regard to the capture and treatment of prisoners of war. It might be well to cite some of the most pertinent clauses:

Prisoners are to be treated with humanity (i. e. not to be maltreated or insulted) and in conformity with their rank (Arts. 2 and 3); they shall enjoy liberty of conscience and freedom of worship (Art. 5); if convenient they shall be furnished with such articles of use or luxury as they may wish to purchase (Art. 24); sick and wounded prisoners who are vouched for as incapable of further military service, are to be sent back to their own country on parole after they have been properly cared for in hospitals and ambulances (Art. 28).

These rules were supplemented in September 1904 with regulations concerning the labor that might be required from prisoners of war.

Article I provides that "prisoners of war might be required to work for governmental or public establishments, corporations or individuals according to their rank, situation or capacities," but that officers cannot be forced to labor against their own will. Such work must not be excessive or humiliating to those engaged in it.[1]

In addition to these provisions dealing with the physical arrangement and comfort of the prisoners of war, the Japanese were thoughtful of the psychological welfare of the captured Russians and their families in Russia. On March 1, less than three weeks after the outbreak of the war, a Bureau of Information was founded in Tokyo by decree of the Emperor.

[1] See: Amos S. Hershey: *The International Law and Diplomacy of the Russo-Japanese War*, New York 1906, pp. 284-285. For the full text of the Japanese instruction see: Nagoaka in *Revue Générale de Droit Int. Pub.* for 1905, pp. 605 ff.

This Bureau was conducted by the Vice-Minister of War, Major-General Ishimoto, and had the task of investigating conditions of each prisoner; of receiving and answering all communications relating to the prisoners; of receiving, transmitting and distributing gifts of money and presents sent for their use; of sending letters from the prisoners to their relatives and friends; of taking charge of all articles and papers and testamentary documents left by deceased prisoners of war and of transmitting them to their heirs; of collecting information from the forces in the field respecting any of the enemy's soldiers who died on the field of battle; of answering any correspondence concerning them; and of taking charge for due transmission of any articles or written papers found upon their bodies. By establishing this Bureau Japan put into effect for the first time the second convention of the Hague Peace Conference of 1899 which covered improvements in the customs of war.[2]

Rules for the treatment and care of wounded prisoners were equally carefully established and carried out with great exactness. *The Surgical and Medical History of the Naval War between Japan and Russia*[3] furnishes an example of the conscientious recording that was practiced during this period. The number of prisoner invalids, the nature of their wounds, and the result of the treatment were described in full detail. Meticulous attention was given to their treatment and recovery, with the result that only 2.4% of the wounded prisoners died. Special attention was given to the prisoners' diet:

> Variety of nourishment was offered according to the nature of the diseases by changing cuisine every day and in order to better suit the taste of the prisoners a plan was adopted later on, by which a certain number of men was selected from among the convalescent prisoners who had some knowledge of Russian cuisine, and these were made to take turns in the cooking.
>
> Particular care was taken of the fare offered to Admiral Rojestvensky. With aid afforded by the Naval Station a monthly allowance of 55 yen was granted, with which a Russian cook was hired at Nagasaki to attend solely to the cooking for the Admiral. A sample of the bills of fare as it was served to the prisoners in the hospitals is found below:

---

[2] Hershey, *op. cit.*, pp. 288-291.

[3] *The Surgical and Medical History of the Naval War between Japan and Russia during 1904-1905.* Published by the Bureau of Medical Affairs, Navy Department, Tokyo, 1911, pp. 195-196.

Attending to the Russian Wounded in the Temporary Hospital of the Japanese Red Cross

From: *The Russo-Japanese War Fully Illustrated.* No. I. Tokyo, Kinkodo-Shoseki-Kabushiki-Kaisha (Kinkodo Publishing Co., 1904.) (facing p. 116)

BILL OF FARE, JULY 1, 1905

Official Grade	Breakfast	Lunch	Dinner
For Officers and Others of Equal Rank	Bread, Soup, Eggs, Butter, Tea, Sugar Milk.	Bread, Soup, Fried Fish, Roast Beef, Sago Pudding, Butter, Tea, Sugar, Milk.	Bread, Soup, Boiled Beef, Roast Chicken, Ox-tail Stew Butter, Tea, Sugar, Milk.
For Warrant Officers or Others of Equal Rank	Bread, Soup, Eggs, Butter, Tea, Sugar, Milk.	Bread, Soup, Roast Beef, Tea, Sugar, Milk.	Bread, Soup, Roast Chicken, Butter, Tea, Sugar, Milk.
For Petty Officers And Others	Bread, Butter, Tea, Sugar.	Bread, Butter, Meat with Vegetable Soup, Tea, Sugar.	Bread, Butter Boiled Beef, Tea, Sugar.

The medical and social treatment given were exactly the same as that given to the Japanese patients. "All the officials of the hospital felt deep sympathy for the prisoners and were kind and gentle to them."[4] Particular efforts was made to alleviate the difficulties created by the different languages—the Russian officers knowing French, German or English could be more easily accommodated, but for the enlisted men some Japanese were found who spoke Russian.

The Japanese themselves were quite aware and proud of the extent to which they followed the laws of the Geneva and Hague Conventions and their own literature on the Russo-Japanese war is full of this fact. But their rather righteous self-satisfaction finds ample support in the writings of American and English contemporaries. Amos S. Hershey, an American professor of political science and international law, in his factual and excellently documented study on *The International Law and Diplomacy of the Russo-Japanese War* goes so far as to say, "Everyone knows that the Japanese have set the world an example in sanitation and medical science as applied to the sick and the wounded, and that their physicians and surgeons do not distinguish between friend and enemy either in the hospital or on the battlefield."[5] But in this he only sums up the general opinion of neutral witnesses of the war. It would be impossible to quote even one tenth of the many statements made on behalf of the Japanese, a few samples of eye-witness accounts will have to suffice: Frances Parmelee, an American Medical Missionary, wrote: "If the

[4] *Ibid.*

[5] Hershey, *op. cit.*, p. 291.

[Russian] prisoners entered Japan with fear and trembling as to their fate . . . they were doubtless assured of the kindly and sympathetic feeling of the common people . . ." [6] The London *Times* for May 17, 1904 printed a dispatch to the effect that " those in the hospitals are most carefully treated, their lodging is superior to that of the Japanese wounded."

Dr. L. L. Seaman, an American specialist in contagious and epidemic diseases peculiar to the Orient, and who spent considerable time with the 2nd Imperial Army, reported: " It is at Matsuyama that Japan quarters her prisoners, and in her treatment of them she has furnished another surprise in warfare. Probably no prisoners of war ever enjoyed such comfort and such liberty as the Russians now sojourning at Matsuyama. The officers had quarters in a magnificent Buddist temple. The other prisoners were stationed in temples and large bamboo barracks and hospital wards, and were made most comfortable. We were at liberty to visit the Russian prisoners as we desired and could even take what gifts to them we chose. Although they were restrained within certain limits adjoining their quarters it was difficult to realize that they were prisoners. The food especially pleased them. Many prisoners declared frankly that they had never fared better in their lives. When we left Matsuyama it was with a feeling that Japan in the treatment of her prisoners, as in her efforts for the prevention of disease among soldiers, had not only surpassed all previous records, but had established a new standard of humanity for the nation of the future." [7] Miss Ethel McCane, an Australian, recorded her impressions, gathered while watching the wounded who were being brought to the hospital ship: " There was no difference made between their own soldiers and the Russians; they had exactly the same consideration." And she summarized her observations " Little over thirty years ago they knew nothing of European civilization, and here, today, I had witnessed a treatment of their enemies which would reflect the greatest credit on any nation." [8] Lieutenant Colonel W. G. Macpherson of the Royal Army Medical Corps reported: " I was permitted to see all Russian wounded Prisoners, and examined several of them." He praised highly the medical work, the nursing staff and the operations performed upon the prisoners by selected famous Japanese surgeons.[9] An American surgeon, Dr. Spear, after examining the wounded Russians, commented: " Abdomens with

[6] Alfred Stead: *Great Japan, a Study of National Efficiency*, London, 1906, p. 309.

[7] Louis Livingston Seaman: *From Tokyo through Manchuria with the Japanese.* New York, 1905, pp. 58 and 71.

[8] Ethel McCane: *Under the Care of the Japanese War Office*, Melbourne, 1905.

[9] *The Russo-Japanese War*; Medical and Sanitary Reports from Officers attached to the Japanese and Russian Forces in the Field. London, 1908.

contained viscera were perforated in all directions. Here too, the Japanese bullets surprised the medical men by their humanity. At very close ranges, say under 200 yards, these wounds were very fatal, but soon after that distance had been passed cases began to recover." [10] George Kennan, an American explorer and author, testifies that: "Japan treats the wounded soldiers of her enemy better, in some respects, than her own. They are humanely dealt with on the battle-field and skilfully cared for in the hospitals; their daily ration is more generous than that of wounded Japanese . . ." [11] But although President Theodore Roosevelt spoke of George Kennan—who was primarily a Russian expert—as "wild pro-Japanese," [12] and general American and English public sentiment clearly favored Japan, the concordance of the vast numbers of statements leads one to believe that the Japanese took their responsibilities towards humanity very seriously.

Viewed in the light of their present reputation it is particularly astonishing to find such agreement among the neutral contemporary reporters and I have not been able to find anything in the Russian literature on the years 1904-1905 to invalidate these statements. As a matter of fact, Kuropatkin is quoted as saying: "They are a most valorous foe, and are most correct in observing the arts of war. In the latter respect it is the most agreeable war I have ever experienced." [13]

III

It is, of course, impossible to determine which are the "true" Japanese, those who were the exponents of humane warfare or those we have learned to know since 1931. Yet it is interesting to weigh the circumstances—political and ideological—that contributed to both developments in order to get a clue as to their possible re-education.

The Russo-Japanese War occurred fifty years after the opening of Japan and about thirty-five years after the close of the feudal period, both decisive events in the formation of the Japanese national character. The result of Perry's visit in 1854 was a tremendous blow to Japanese self-esteem. The mere arrival of four ships was able to break down the barriers of the century-old coveted isolation and the indirect result of these

[10] *Report on the Russian Medical and Sanitary Features of the Russo-Japanese War* to the Surgeon General, U. S. Navy, by Surgeon Raymond Spear, U. S. Navy, Washington, 1906, p. 67.

[11] See *Fortnightly Review* for February 1905.

[12] Tyler Dennett, *Roosevelt and the Russo-Japanese War*, N. Y. 1925, p. 286.

[13] Hershey, *op. cit.*, pp. 323-324.

four ships was the abolition of the much older institution of the shogunate. Once opened, Japan found herself hopelessly handicapped for the life in a mechanical age and was forced to mechanize herself as rapidly as possible. At the same time a relationship with the foreigners in Japan had to be established. Japan's immediate reaction to the forced opening—anti-foreignism—proved to be impractical as well as untenable. There was, furthermore, a grudging admiration for the Western powers and the will to catch up with them on their external mode and standard of living, with the consequences that a veneer of Western civilization was superimposed upon the old basis of Japanese culture. This was all the more possible as the representatives of anti-foreignism, the *samurai* and *daimyo*, were soon relegated to a considerably less prominent position, when their exponent, the shogun, was disregarded for the first time in eight centuries, for the Western powers had insisted, in 1865, that their treaties with Japan had to be validated by the Emperor's signature. Western support of the Emperor and placing him in direct contact with foreign envoys quieted anti-foreign feeling to a great extent and it helped to pave the way for the revolutionizing of Japan.

But in 1871, the same year when the feudal system was completely abolished, anti-foreign feeling flared up again with the movement to revoke the treaties which deprived Japan of judicial and tariff autonomy. Agitation and negotiation for a more satisfactory treaty continued for over twenty years and no solution was reached until 1894, when Viscount Aoki and Lord Rosebery signed a new treaty which opened the way for the conclusion of new treaties with the United States and all the leading powers of Europe on a footing of equality.

IV

Recognition of their equality with Western nations was sought by the Japanese to an increasing extent. They were acutely aware of the fact that the centuries of seclusion had created among the foreign nations a picture of primitiveness and savagery. Far-seeing Japanese realized that this impression could best be combatted by joining the most humanitarian institution that existed in the Western world—and created a bond among the nations that belonged to it—the Red Cross. In this endeavour the progressive Japanese at first met internal resistance, "the petition for the signing of the 'Red Cross' was rejected on the ground that it was an absurd idea, worthy only of 'abject followers of Western Medicine.'" [14]

[14] "The Red Cross in Japan" by Surgeon General Baron Tadanori Ishiguro in *Fifty Years of New Japan*, compiled by Count Shigenobu Okuma, London, 1909, vol. 2, p. 310.

The proponents of the idea then successfully suggested in 1872, to form a purely Japanese society, the *Hakuaisha*, the badge of which was to be a horizontal red line on a white ground to which—they knew—a vertical line could and would be added eventually.

When three years later Marshal Prince Oyama returned from France whither he had gone to study military science, he was able to convince the Japanese Council of State of the desirability of joining the Red Cross, having seen it in action during the Franco-Prussian War. But before Japan could formally join the Red Cross its own institution came into action, in 1877, at the occasion of the rebellion of Kagoshima, and obtained from the Commander-in-Chief of the imperial army permission to undertake the care of the wounded on both sides during the ensuing civil war. When, in 1886, Japan was, with the help of the Austrian Baron von Siebold, admitted to the Geneva Convention, the *Hakuaisha* received its vertical line, the name of Red Cross Society of Japan, and Imperial blessings.

In the following year the Surgeon General, Baron Tadanori Ishiguro, accompanied by three other Japanese, journeyed to Germany to represent Japan and the Japanese Red Cross Society at the Fourth International Red Cross Conference at Karlsruhe. During the seven days of the conference the Japanese contributed medical knowledge, gained during the civil war. They had developed a system by means of which antiseptic surgery could be more easily performed on the battlefield. Rolls of disinfected bandages were sewn into the uniforms of the soldiers who during their training had received instructions as to the use of these bandages. Thus Japanese soldiers were able to care for their own and each other's wounds until regular surgery could be performed upon them. Baron Ishiguro was also able to make suggestions as to the most efficient way of incubating the "main particulars of this humanitarian scheme for the brotherhood of the world." [15] Copies of the compendium of the Red Cross Convention had been distributed throughout the Imperial Army and the commander of each company was charged with the task of explaining the rules of the Red Cross to his men. A sample of the antiseptic bandage-rolls and a copy of the Japanese compendium were inspected by the assembly with great interest.

Yet on the fifth day the Japanese received a severe jolt when the question arose whether assistance and protection of the Red Cross should also be applied to non-European countries; Baron Ishiguro, however, feeling that to be directed against the Japanese delegation, countered the

[15] *Ibid.*, p. 315.

suggestion successfully by stating " in plain terms that the delegates from Japan considered that even to entertain such a proposition was to do gross violence to the spirit of the Red Cross." [16] Thus at the end of the conference Japan had become a formal member of the League and the Japanese felt that their country " had come into closer and not altogether discreditable contact with the outside world, and the outside world with Japan."

In order to make payment of the membership dues more attractive to the Japanese the badges of the Society of the Red Cross were created by virtue of a special order sanctioned by the Emperor on June 2, 1888:

> The insignia of the Society of the Red Cross are bestowed upon members in a solemn ceremony, during which the honorary president gives the names to the Minister of the Imperial Household, who in turn refers them to his Majesty the Emperor.
>
> The result of this ceremonial is that the badge is, in a sense, really conferred by the Emperor himself, precisely in the same manner as various other decorations and medals of the empire are conferred.[17]

Consequently it became a coveted honor to wear one of these badges, especially as princes and princesses of the blood were also members, the latter to spur women into accepting positions as nurses. Another consequence of this staging of the Japanese Red Cross was its inner political value: through its centralization culminating in the person of the Emperor there was thus created between him and each member a personal relationship fortified by the honorific bestowal of the badge. The active members of the relief staff of the Red Cross were paid for being available as well as for the services rendered, for it was felt that " efficiency is not always the accompaniment of good will." [18]

V

The Japanese Red Cross was well organized, in 1894, at the outbreak of the Japanese-Chinese War, and Japan, as the only Aaiatic nation belonging to the Red Cross, was eager to prove to the world its strict adherence to humanitarian rules. Field Sanitary Physician-in-Chief Baron Ishiguro suggested that " special plans must be adopted for impressing upon the minds of the enemy the principle of the Red Cross work." [19] Ishiguro furthermore instructed the military physicians:

[16] *Ibid.*, p. 316.
[17] Stead, *op. cit.*, pp. 337-338.
[18] *Ibid.*, p. 353.
[19] *Ibid.*, p. 329.

It is not necessary to dwell upon the barbarous conduct of our enemy, but we, on our part, must show them every possible kindness. There must be many ways for doing this, but nothing will be so effective for the purpose as the medical treatment of the sick and wounded.[20]

This spirit of humanity also pervaded Japan's warfare during the Boxer uprising.[20a]

At the outbreak of the war with Russia Japan's humanitarian tendencies in warfare reached their point of culmination. The rules regarding the prisoners of war were held in readiness; the organization of the Red Cross was firmly integrated into the Army; its doctors, nurses, and attendants were especially trained in military hospitals and as a consequence Japan was able to demonstrate to the world that she was not only at par, but according to many sources, even surprised her western foe in humanitarian treatment of her prisoners of war.

This humanitarian conduct of the Japanese was, to a great extent, motivated by nationalistic pride consciously directed into these channels. But other factors, some closely connected with the past, others with ambitions for the future glory of the Empire, were additional motivation. Japan's emergence from the era of feudalism was too recent to have stripped her entirely of the last vestiges of feudal, i. e. chivalrous warfare. The Emperor's poem,

> The foe that strikes thee, for thy country's sake
> Strike him with all thy might; but as thou strik'st
> Forget not still to love him.[21]

was quite in keeping with the old code of the samurai. But the Japanese were also quick to see that they and not the Russians enjoyed the sympathies of the West and were aware of the fact that absolute adherence to humanitarian conduct would win England and America completely for their cause. In the years 1904-1905 Japan was at the beginning of its intercourse with other nations on equal terms and was eager for an auspicious start.

VI

The outcome of the Russo-Japanese war constituted a turning-point in Japan's attitude toward the West. With its defeat of a Western nation much of the old awe and external diffidence towards the West vanished. Japan became a world power; her legations were raised to embassies, military service was extended and war taxes were maintained in peace

[20] *Ibid.*, p. 330. [20a] *Ibid.*, p. 290. [21] *Ibid.*, p. 286.

time. The militaristic *post bellum* program allowed for higher expenditures for army and navy, and it was planned to increase the national income through artificial stimulation of industry, export, navigation, and exploitation of trade in Korea and Manchuria and through emigration of workers to Hawaii and to the United States. This ambitious program soon met its first obstacles.

The Western powers who had watched Japan's development of strength sympathetically as long as it was directed against Russia now realized that an expanding Japan constituted a danger to their own interests. The English Parliament voiced its concern about the violation of the "Open Door," and the concept of the "Yellow Peril" came into being. On the American West coast public sentiment ran high against the Japanese and in San Francisco, where they had been used as strike-breakers, Japanese children were excluded from public schools. In spite of the appeals of Ambassador Aoki and the liberal attitude of Theodore Roosevelt, Congress did not act on behalf of the Japanese. The situation was further intensified when America, in 1907, sent her Atlantic Fleet into the Pacific, but Japan met this emergency by concluding separate treaties with the French and the Russians and by inviting the American fleet to visit Japan where it was received with great splendor.

But although the actual danger of war had been averted, Japanese feeling towards the West had become increasingly critical. The influence of the West was re-examined by Japanese scholars in the light of heightened nationalism and race consciousness, and men like Inazo Nitobe changed the current phrase of the "Europeanization of Japan" into "Japanization of European influences." By this he meant that the accepted European influences—spiritual and technical—had been adapted to existing institutions in Japan, that it was a process of "skimming the cream from the milk irrespective of the breed to which the cow belonged." [22] Definitely considered as "cream" was the Western military system and military engineering, but after having adopted it the Japanese emphasized that they had merely wedded modern technology to their own ancient martial spirit. Kipling's "East is East and West is West" was met by Nitobe with a proud emphasis on the difference:

> Wherefore follow alien ways and alien thought
> When here the *samurai's* noblest virtues can be taught.[23]

With this emphasis on national traits resentment and grudges toward

[22] Inazo Nitobe, "The Influence of the West upon Japan," in *Fifty Years of New Japan*, p. 465.
[23] *Ibid.*, p. 473.

the West were fostered and a tremendous feeling of superiority over other Asiatic nations developed. Japan became actively aware that she had been deprived of the fruits of her military victories: Russia, Germany, and France had prevented her from obtaining southern Manchuria as her prize of war with China, and America, in settling her peace with Russia, had frustrated Japan's demand for reparations. Furthermore it had been America who had raised the racial barrier against Japanese immigration.

VII

The natural outlet for Japan's nationalistic pride lay in the assertion of her superiority in her own continent, Asia. Japan had gained undisputed military supremacy in the East; China in the eyes of the Japanese was a nation of shopkeepers, Japan of *samurai*. New Japan was, as Nitobe explained, "indeed, not an accretion from without of foreign culture. It is the application of innate race-energy to new circumstances, the self-realization of our own strength, the conscious and purposive utilization of world forces." [24] This innate race energy was now applied to affirm Japan's new position in the world and to expand it despite the mounting difficulties. Japan having been obliged to agree to voluntary restriction of emigration to America and Hawaii, now proceeded to channel the stream of her settlers into Korea. The end of Japanese emigration to America also caused a considerable reduction in tax income which was aggravated by the action of the United States in severely restricting imports from Japan. As a consequence Japan was forced to abandon her ambitious military and naval program—though not her planning.

During the first World War, Japan, as one of the allies, acquired the German possessions in Asia and a mandate over those in the Pacific, but she was prevented by her allies from using this period of turmoil to press her Twenty-one Demands upon China. When Versailles shattered Japan's hopes for racial equality by refusing to abolish the exclusion act, the latent feeling of anti-foreignism arose again and became militant; this time it was unrestrained by diplomatic considerations, and consciously fostered by proponents of nationalistic movements.

VIII

Japan and the minds of the Japanese were being prepared for war. Since neither Shintoism nor Buddhism sufficed to attract the undivided

[24] *Ibid.*, p. 464.

loyalty of the Japanese people, the old feudal concept of *bushido* was employed. *Bushido* had been revived and modernized during the early years of Meiji to strengthen the new national allegiance to the Emperor. The new form of *bushido*, creating unity and obedience, proclaimed Japanese superiority, condoned aggression, and also provided the basis for Japan's "divine mission" throughout Asia and the world. But the Japanese were not only imbued with ideological arguments; the untenable economic question received additional stress. The Western powers by raising tariff walls against Japanese merchandise, had increased the economic difficulties created by Japan's overpopulation and industrialization. "This encirclement of markets was popularly accepted by the people as a deliberated attempt on the part of the 'satiated' powers to strangle Japan's markets." [88]

Japan, although preparing for an eventual war with England and the United States, did not, however, hasten to antagonize these "satiated" powers. Her ambition was first of all and primarily directed against China's Northeastern provinces. Japanese militarists realized that, before declaring war on America, Japan must strive to gain a superior position in China. To this end Baron Tanaka, outlining the Positive Policy in Manchuria suggested in his Memorial presented to the Emperor on July 25, 1927: "We must establish a colonial department the special function of which is to look after the expansion in Manchuria and Mongolia. The administration of Formosa, Korea and Saghalien Island may be its nominal function, but our expansion in Manchuria and Mongolia is its real purpose. This will blind the eyes of the world on one hand and forestall the disclosure of secrets on the other. . . . The creation of a new empire in Mongolia and Manchuria is of utmost importance to the existence of Japan." [89]

For the conquest of these areas Japan needed foreign capital as well as raw material and she therefore exerted herself to attract American investments. Japan thought of China as politically unstable and chaotic and proceeded to stimulate even more unrest in order to discredit China and to discourage American capitalists from investing in that country. Instead Japan herself, politically stable and "orderly," was made to appear as a safer country for investments. For this purpose the Japanese also successfully exploited the effect of the Chinese-Russian united front of

[88] Takeuchi, Tatsuji: "The Background of the Sino-Japanese Crisis." *Amerasia*, vol. 2, no. 4, pp. 183 ff. June, 1938.

[89] *Information and Opinion Concerning the Japanese Invasion of Manchuria and Shanghai from sources other than Chinese*. Edited by K. N. Lei, Shanghai, 1932, p. 26.

1926-27. Thus Japan came to represent herself as the Far Eastern bulwark against Communism.

Because of their conviction of China's weakness and because of their wish not to antagonize more than was unavoidable the Western powers, Japan planned to deal with China piecemeal and by way of "incidents." Hitler's *Sudetenpropaganda* was anticipated by the Japanese in their construction of "provocations" for attacks on China: the ears of the Japanese soldier in particular and the world in general were filled with laments over the mistreatment received by the Japanese residents in China. The Nakamura case was utilized by the military to stir up great public feeling against China, both in the Japanese army and among the general public, and to pave the way for aggression.

IX

As a result of all these developments the Japanese army of 1931 was entirely different from that of 1900. The individual soldier had received his indoctrination through school and State Shinto, and from the intensively emphasized code of *Bushido* he drew his conviction of racial superiority. Each soldier had been made aware of his share in his country's "divine mission." This propaganda and indoctrination explain to a great extent the inhumane attitude of the Japanese soldiery of whatever rank toward their prisoners of war. Thoroughly convinced of the inferiority of every non-Japanese; filled with hatred born of humiliation, envy, and suppressed revenge toward the English and the Americans; feeling contempt for the colonial fellow Asiatics, the Japanese saw no reason to respect their captured enemies. Since they were utterly convinced of their final victory and since all the major powers were involved in the war, the Japanese felt sure that they would never have to account for their actions.

This changed attitude became apparent almost immediately upon their invasion of China. The Japanese had been taught to believe that the Chinese—tired of their warlords, their political instability, and Western interference—would gladly welcome their strong Asiatic neighbors. But the result of the invasion was markedly different and quite unexpected: the Chinese confronted by danger to their country rallied and a feeling of national consciousness surged up within them. The Japanese were furious about this unexpected forceful resistance, but this fury was not as yet strong enough to impress their leaders with the obvious necessity of waging a quick and total war, for only thus could they hope to over-

run and conquer the vast country of their enemy. Instead their fury, born of frustration, expressed itself in unheard of excesses and orgies of cruelty. A war against a country as large as China can only be won through quick annihilation of the army of the enemy. When Japan came to this realization she had already—although piecemeal—sent an army into China of sufficient size to lead a major war. Yet all this had happened against plan and in a haphazard fashion, allowing the Chinese sufficient time between the various pushes to withdraw into further recesses of their vast country. The growing realization that the Chinese had forced Japan to abandon her *Blitzkrieg* method and had committed her to a total war earlier than Japan had forseen increased the destruction and violence that followed in the wake of the invading troops.

The Western world was quite aware of Japan's wanton destruction and murder in China. A number of formal protests were lodged by the embassies and governments of England and the United States, but these protests were mostly directed against the disturbances of the settlements. Only a group of British and American missionaries went so far as to sign a statement condemning the invasion itself and the activities of the Japanese in Shanghai. This careful maintenance of American and English neutrality was to a great extent the result of the coating of anti-communism Japan had given to her aggression; it seemed to outweigh in the minds of the Western powers the conflagration in China. Western sentiment of the middle and late thirties can be characterized in the words of a writer who, while deploring Japanese destruction of churches, nevertheless expressed a general condemnation of Japanese conduct: "the profanation of everything sacred could not have been more savage and more complete if it had been a communist army that had occupied them." [27] His lumping together of Japanese and communist savagery is significant.

Thus Japan, like Germany, profited from and exploited the fear of Western capitalism of communist expansion and by keeping alive this hypothetical threat they had found an effective means of keeping the Western powers at bay. By proclaiming their anti-ideological crusade they kept the world from taking as serious their own racial ideologies of Pan-Germany and Pan-Asia.

X

As in earlier days Japan's humane conduct of war had reflected her aims for the future—to become one of the great nations—so in this war

[27] Hsü, Shu-hsi, *A Digest of Japanese War Conduct*, Shanghai, 1939, p. 49.

her inhuman conduct indicated that she felt sure of becoming the nation that would rule Asia. The Japanese soldier no longer fought the soldier of China and respected him as a foe, but tried to destroy the country of his enemy, its soldiers, its women and its children. The Japanese soldier himself while receiving his training had become accustomed to seeing and to suffering punishments of slapping and beating. Data on the brutalization of Japanese soldiers as a result of the treatment received from their own officers are known to exist but are still in the hands of government departments and cannot be discussed now. It is clear, however, that this brutalization largely contributed to the outrages committed by the Japanese troops. In the absence of elaborate rules in regard to the treatment of their prisoners of war, such as had existed in 1904, the behavior of Japanese units varied greatly with the different army commanders and according to the degree of Chinese resistance. Contemporary accounts seem to indicate that where resistance was most stubborn the Japanese resorted to the most violent atrocities. This was exemplified in Nanking, in 1937, where the Japanese indulged in such extraordinary excesses that they were unable to exploit strategically their victory.

A comparison of a few of the opinions of neutral observers of Japanese warfare after 1931 with those of the period 1904-1905 brings out the startling contrast. On February 1, 1932, *The China Press*, Shanghai, reports "that almost 150 Chinese prisoners yesterday paid the supreme penalty meted out to prisoners of war. Truckloads of bodies of Chinese were disposed of by Japanese landing party forces during the morning hours. . . ." And "many young and middle-aged Chinese . . . have either been put to death for crimes which they have never committed, or are detained by the Japanese with an uncertain fate ahead." The uncertainty of their fate was illustrated by the account of Mr. H. Forster, manager of the Philippine chapter of the American Red Cross Society, who visited Chapei and could not find any Chinese soldiers being cared for in Japanese hospitals as had been reported.

Even the Red Cross itself, formerly held in such high esteem, became a target of Japanese attacks. In an appeal to spare refugees and Red Cross workers *The China Press*, Shanghai, wrote on February 13, 1932: "The attack repeatedly made upon Chinese flood refugees and Red Cross workers, both foreign and Chinese, by Japanese aviators and their armed compatriots in Chapei during the last ten days will go down in history as an outstanding event of 1932 in the world. . . . Three Chinese Red Cross workers were fired upon by Japanese troops when descending from an ambulance on an errand of mercy in Chapei, and all of them were badly

injured in spite of the fact that the ambulance carried the Red Cross flag and the workers wore Red Cross badges on their arms. While the Red Cross workers are thus subject to both aerial and land attacks, Chinese flood refugees naturally cannot expect better treatment from armed Japanese who are afflicted with a mania of destruction and revenge. In the case of Japanese attacks on the Red Cross workers, the victims are still lying in hospitals. In regard to the Japanese bombing of the refugee camp and the consequent killing of 50 'perfectly innocent lives,' we have the authority of Sir John Hope Simpson, whose name is internationally known. There is no question about the authenticity of these reports. If a country like Japan could allow its soldiers and aviators to bomb Red Cross workers and flood refugees and thus disregard all conventions which it has entered into with the world Powers, there is nothing sacred to it." Needless to say that this is only one of a legion of similar reports on violations of the Red Cross.

If one considers that in 1905 American surgeons credited even Japanese bullets with humanity, the investigations made by Mr. Sidney H. Brown, secretary general of the International Committee of Red Cross Societies, Geneva, in regard to the dum-dum bullet wounds received by Chinese soldiers, become significant. "Mr. Brown was much impressed with the mercy work here and was convinced that dum-dum bullets wounds have been received by Chinese soldiers." [28] This observation was confirmed by an Austrian, Dr. G. F. Bume, who, after examination of two wounded Chinese, concluded: ". . . I herewith definitely state that the two above mentioned instances are cases of dum-dum bullet shots." [29] Mr. Hsü, in his preface to *A Digest of Japanese War Conduct*, 1939, compiled from neutral reports, concludes: "The fact that the Japanese have, in their present war against China, failed far below the standard required of a member of the Family of Nations in practically all important phases of their conduct has been established beyond doubt."

In this regard Pearl Harbor was not a new phase; it only gave Japan a broader field of action. The treatment accorded Allied prisoners is only too well known and does not need further elaboration. It was consistent with Japanese indoctrination and was carried out with the intention of hastening the removal of the white man from the continent of Asia. The humiliation that went with the mistreatment had the purpose of degrading the white masters in front of the colonial people in order to destroy whatever respect the colonials still had retained for their old

[28] K. N. Lei, *op. cit.*, p. 265. [29] *Ibid.*, p. 223.

rulers. The purposive destruction of the white enemy was further intensified by the anger aroused by the unexpected fighting strength of the "decadent democracies."

The fact that some of the colonial peoples, the Filipinos, took the side of their white masters helps to explain the seemingly inconsistent attitude which the Japanese showed to their would-be members of her Greater East Asia Co-prosperity Sphere. The Japanese wished to make sure that every vestige of loyalty for their former masters had disappeared, and that every aim for absolute freedom from any kind of domination was smothered at birth. Since Japan planned to fill her own needs first and to leave only the surplus—if any—to the fellow Asiatics, the idea of the co-prosperity sphere was to a large extent only theoretical. Hence Japan had to adopt a strong attitude to bring the "liberated" fellow Asiatics into their own fold. As Otto D. Tolischus has proved in his assemblage of the statements made by Japanese leaders,[20] too much consideration could not be shown the inhabitants of occupied countries, lest such a policy undermine Japanese rule. The inhabitants must be made to feel that Japan was the leader.

XI

Japanese leadership of her fellow Asiatics has come to a sudden end and with it her leadership in her own country. Japan's survival as a nation depends upon the efforts of its former enemy. The extent of apparent Japanese subservience indicates their basic realism, which is seemingly completely intact in spite of decades of indoctrination with ideological dreams of invincibility and racial superiority.

This present subservience is the third stage in Japan's relations with foreign nations since 1854. Each previous stage found its most characteristic expression in the manner of conducting war. Japan's early awe of the West and her uncertainty as to her military strength in respect to the Chinese and to the Westerners caused her to follow a path of correctness and fairness in warfare. Her victories over the largest Asiatic and over a Western nation gave her a sense of security and aroused her contempt over the defeated foe. The memory of these victories and the subsequent expansionist policy resulted in a feeling of complete indifference toward the judgment of any other nation.

Now Japan is compelled to develop a new relationship with the world.

[20] *Through Japanese Eyes.* New York, 1945.

Although this relationship is to be determined by her former enemies rather than by Japan herself, it can only be of duration if it is in any way homogeneous with the Japanese national character. War is to be outlawed and—presumably—there should not ever again arise the problem of Japanese treatment of war prisoners. Yet if Japan is to be prepared to be admitted once more as a member of the family of nations, its fundamental attitude toward its fellow human beings of whatever race and nationality in whatever circumstances is of utmost importance. The fact that the Japanese were—historically speaking—not too long ago able to amaze the world with their humanitarian behavior should strengthen our hopes for the possibility of the rehabilitation of the Japanese.

UNIV. OF MICH.

MAX MEVERHOF, 1874-1945.

ARABISM, EGYPT, AND MAX MEYERHOF

CLAUDIUS F. MAYER

I. East and West

Contact is the most basic, the primordial quality of the Universe. Without it there would be no matter, no energy, no action, no Cosmos. It exists in many varieties, distinguished by the nature of agents which come in touch with each other, and further qualified by space and time to which the meeting of agents is limited, whether a point or a large surface, whether a few days or centuries. It is contact which makes atomic fission possible, changes the flow of rivers into electric energy, modifies the face of the earth, begets plants and animals and human beings, moves poets to praise Lord and Love, and produces the highest virtue as well as the meanest sin of mankind.

Individual knowledge also results from contact of an observer with the outside world; contact breeds experience, and experience organizes into scientific knowledge. Thus, science itself is the result of many contacts with many objects of study, and the greatest force in human progress is the historical and geographical junction of different cultures.

When foreign cultures meet, special energies develop which result in diffusion of ideas through semi-permeable barriers; they also enable the foreign culture to fecundate our own, regardless whether we are willing to recognize openly their power, or rather incline to deny their existence for political or other reasons.

Regardless whether the result of cultural contact was an atomic bomb or a gadget for the bathroom, a method of protection against smallpox or a new drug for cleaning teeth, it has always saved scientific heritage of one period or cultural cycle for another. Contact between cultures may be of varying extent, depending chiefly upon the representatives and vectors of culture, and on such circumstances as political conditions, national, racial or religious hatred, etc. Some of these factors may result in spontaneous or planned reduction of cultural contacts, with establishment of various types of geographical, political or social barriers at the interfaces of cultures.

A barrier may be a concrete Chinese wall, or a law prohibiting the exchange of ideas and cultural values, an edict for burning up anything

that is foreign, or a wholesale warfare and crusade against whatever seems to be undesirable or non-national at a period. Such barriers not only isolate a culture from others, but they inevitably lead to encystment, sterility of minds, regression, or complete decline.

Encysted cultures of the past are like the wheat grains found in the tombs of Egyptian Pharaohs:—they are still able to germinate and bring new fruit, provided that they fall into good soil and are properly cared for. It is the task of the historian to find these cultural seeds, extract from them what remains valuable, or to plant them to the best advantage of contemporary science. When such an effort of extraction or planting of an old stored-up culture is made by many at the same time, the old culture may become completely revived, again vigorous and active. Such an era might be called a renaissance, if the interest in the old is truly universal in extent, and includes all artistic, scientific, literary products, and spiritual values of the past. When only a part of the past is revived and made active anew, there may develop an era of humanism in literature, of Hippocratism or Neo-Hippocratism or Galenism in medicine, and of any other *ism* of style or fashion in arts, religion and politics.

In the history of human culture during the past 2000 years the greatest interaction which ever developed occurred in Europe, along an indefinable, often shifting front of contact between two great cultures, that of the East and that of the West. These cultures have been often contrasted by their partial aspects with such terms as Classicism and Arabism, Greco-Romanism and Orientalism, Christianism and Islam. All these terms signify but a small part of the great cultures, or a special period of their histories, and emphasize only the differences in the mentality of the Easterner and Westerner.

Though this difference may seem to exist even today, basically the two cultures form a single unit. It was only through a rather recent research in history of science that we learned about the undisputed unity of scientific thought throughout the 2000 years from the Greeks to the 20th century. It was recent historical investigation that discovered the great role the East played in saving and further fostering the Western Greco-Roman heritage of thought for the West through almost seven hundred years.

This is contrary to the opinion of the average man who feels that there is a gap in the Middle Ages, and identifies the extension of the Arab Empire and the Islam in the 7th century with the destruction of Western culture. The Arabs gained whatever they could by the contact with the West, and in the 10th-12th centuries they taught the Christian West the

borrowed old science, refreshed meanwhile by Arab practical ideas, in their many universities.

Thus, the cultural exchange was mutual, yet the retransmission of old culture could not be exhaustive or thorough owing to the barrier of language, the difference in religion, and the change in political situation. The Arab culture, its peak in the 11th century, began to decline in the 13th century, and—at least for the Westerners—finally encysted in the 16th century, at the time of the European renaissance, thereby keeping many scientific values hidden from the world.

By the 16th century, Western culture was fully enjoying the renaissance of the old Greco-Roman classical culture, revived from Byzantine sources and thought to be genuine, while the Arabs were no further used as vectors of science in general, and their former merits were soon forgotten. Only at the end of the 18th century did the Westerner's interest again more intensely turn to the East, due partly to the political interests of European states in Eastern affairs.

Then, the study of Arabic manuscripts began in England, France, Germany, Italy. University chairs were created for orientalists; libraries took stock of their holdings in Arabic, Persian and Turkish manuscripts; and scholars started on expeditions to centers of the Moslem world, in Morocco, Tunis, Egypt, Palestine, Syria and Turkey, all around the Mediterranean, to reestablish the lost cultural contact, and to bring back to life the East from its sleep of many hundred years (or at least that is what they thought).

Among the many eminent European scholars engaged in the study of Arab or Moslem science in the 19th century were Sylvestre de Sacy, Georg W. Freytag with his huge Arabic dictionary (1830-37), F. Wüstenfeld who wrote a history of Arab physicians (*Geschichte der arabischen Ärzte*, Göttingen, 1840), Julius Theodore Zenker who compiled a bibliography for arabists, Gustav Flügel, R. Seligmann, the French Lucian Leclerc who published a history of Arab medicine (*Histoire de la médecine arabe*, Paris, 1876), August Müller who edited the Arab text of Ibn Abí Usaibi'a's biography of scientists written in the 13th century (Cairo, 1882), Edward W. Lane who is known for his translation of the Arabian Nights and for his dictionary of the Arabic language, Moritz Steinschneider, the great semitic scholar, whose many publications include also one on the Arabic literature of the Jews (*Die arabische Literatur der Juden*, 1902), and, finally, Brockelmann whose basic history of Arabic literature was published just at the end of the century (*Geschichte der arabischen Literatur*, 1898-1902).

By the end of the 19th century these attempts at revival of Moslem science and the Moslem world proved to be very successful, especially in the field of politics and religion. Western interference with their sleep aroused the Moslem nations politically to a rather strong nationalism. Egypt itself showed the results. In Egypt, however, English interests guided the development of the country, which today is thoroughly imbued with Western culture, and Western hatred. As a result, there is now in Egypt cultivation of all branches of science, invasion of Europeans in the role of teachers and professional people, establishment of various cultural institutions, hospitals, publication of many scholarly works in Arab, French and English languages, works of the past and the present—in other words almost a renaissance for Egypt.

Egypt was one of the most highly civilized countries of the old Arab Empire and one of the most important centers of Moslem culture throughout the life of Islam. Its mild, subtropical climate, and its history made it the most attractive land for idle tourists as well as for searching scholars. Since the fortunate expedition of Napoleon to Egypt in 1798, it became also an attraction for eye doctors, having been proclaimed the land of unusual eye diseases. For the historian interested in Arab medicine, Egypt offered innumerable opportunities for research, being a natural contact point for bringing the East closer to the West, and an allurement to lift the veil from the gentle face of Arab medieval medicine.

And the eye doctors came from many western lands. Tachau, who introduced modern ophthalmology, and was called by the Arabs iláh-el-'ayín, the God of the Eyes; Robert Koch in 1883, who, having discovered the tuberculosis bacillus, wanted to see the heaven of tuberculosis patients, where he discovered the cholera vibrio and the cause of Egyptian ophthalmia; Morax from Paris, Fuchs in 1893, Kuhnt, and many others. Julius Hirschberg came in 1889; he was an eminent ophthalmologist and a historian of ophthalmology. With his two orientalist friends, Lippert and Mittwoch, he spent much time in collecting or transcribing Arabic manuscripts on eye diseases, while he compiled his fundamental work on Arab ophthalmology (1905).

This history of Arab ophthalmologists (*Die arabischen Augenärzte*, Leipzig, 1904-05) was published in two volumes, and was supplemented by a special study on the Arab manuscript textbooks on eye diseases (*Die arabischen Lehrbücher der Augenheilkunde*, Berlin, 1905). By his work Hirschberg and his co-workers opened up a new field in the study of Arab medieval science, and showed that ophthalmology as a specialty and branch of medicine was founded by the Arabs. Many of these early Arab eye doctors lived and practised in Egypt or Misr as they called the land.

II. The Life of Meyerhof

To this land of mysteries, Arabic medical manuscripts, and infamous eye diseases came, at the beginning of the present century, a German patriot, a qualified ophthalmologist himself, intent on instilling German culture into Oriental eyes. Here he lived, with a few years' interruption, for almost 35 years, transfusing Eastern wisdom into Western science, and taking up the work of the medical historian where Hirschberg left it. This man was Max Meyerhof.

1. *Early Years, 1874-1903*

He was born in Hildesheim on March 21, 1874, from a Jewish family of distinguished scientists and physicians. His maternal uncle was Dr. Otto Spiegelberg, a gynecologist in Breslau and Göttingen; two of his cousins became famous by their scholarly works: Dr. Wilhelm Spiegelberg (1870-1930), professor of egyptology in Strassburg, and Dr. Otto Meyerhof (born 1884), the chemist and physiologist whose research in the chemistry of enzymes was awarded with the Nobel prize of medicine in 1922.

Max Meyerhof studied in Hannover where for nine years he was a student of the Lyceum No. 2, a high school or gymnasium near the "Klevertor" of this old German city. In 1892 he passed his *abiturient* examinations, and, perhaps to follow the family tradition, he decided upon a medical career. He studied in Heidelberg, Berlin and Strassburg where he finished his school years in 1897. He was now an "approbierter Arzt" without being a doctor of medicine. To acquire his medical degree he had to write a doctoral dissertation. Bacteriology was then a novelty, and the young Meyerhof was attracted by it so much that he spent a year (1897) in the Hygienisch-Bakteriologisches Institut of the university at Strassburg where, under the guidance of Prof. E. Levy and Prof. J. Forster, he studied the biology of Proteus, its pathogenicity, its resistance to heat, and made himself acquainted with the bacteriological research methods.

One day Prof. Levy gave him a one-year old culture of diphtheria bacillus, which showed characteristic clubbing and formation of long rods. At that time, the systematic position of this bacillus was not yet definitely established and there was some doubt whether it was a bacterium or a higher type of fungus. Just a year before, Lehmann suggested that the bacillus of diphtheria should be included in a new genus which he proposed to call Corynebacterium. From the study of Prof. Levy's

diphtheria colony Meyerhof came to the conclusion that the bacillus is culturally related to the tuberculosis bacillus and to Actinomyces, and that the clubbing of the rods is not a sign of degeneration or involution of the germ. This study was scholarly, and acceptable as a medical thesis. He dedicated it to his mother and the memory of his father, and presented it to the medical faculty of the Kaiser-Wilhelm Universität of Strassburg in 1898, the year of his graduation.

His years in Strassburg were important for another reason. His cousin Wilhelm Spiegelberg, was professor of egyptology at the university, and Meyerhof attended several of his lectures. These lectures gave him a rudimentary knowledge of hieroglyphics, and awoke in him a longing for the land of ancient culture of the Pharaohs. Everywhere he heard of Egypt, and even the newspapers were full of the recent clashes between British troops and the Egyptian Sudanese; only a few years earlier, in 1896, had Lord Kitchener been able to exterminate the revolution which the Mahdí of Islam started in 1882 in Southern Egypt (present Sudan). Moreover, during his postgraduate studies in ophthalmology Meyerhof was constantly reminded that Egypt was also important for the study of eye diseases.

These studies brought him first to Berlin in 1898 where he spent several months as a voluntary assistant at the Ophthalmological Clinic of Dr. G. Gutmann, and learned the methods of histopathology, the embedding of enucleated eyes in celloidin, and the method of diagnosis from microscopical sections. In the same year, he became the assistant of Sanitätsrat Dr. Augstein in Bromberg with whom he stayed until the fall of 1901. Bromberg was a German town near Poland, better known by its Polish name Bygdosz and by its fame as the chief focus of trachoma in Germany. Here Meyerhof was able to study all forms of the European type of trachoma while inspecting the school children; he also learned the technique of eye surgery and the methods of reconstruction of eyelids.

While in Bromberg, he was invited by his family to accompany his cousin, Otto Meyerhof, who had been advised by his physician to visit Egypt for full recovery from a renal ailment. In December 1900 the two young men reached Egypt with much expectation. There was so much to see, and so many things of interest to a budding ophthalmologist. Beside the pyramids, sphinx, the museums, the mosques of Cairo, and the health resorts of Assuan and Heluan, Max Meyerhof could not help but be impressed by the enormous number of blind, one-eyed and weak-sighted natives on the streets, in the bazaars and in the Arab schools everywhere in Egypt; rows of blind walking one after another in a line reminded him

of Breughel's paintings in the Louvre. He became convinced that Egypt was indeed the classical land of blindness, a country where a young doctor eager to advance the science of ophthalmology by original research would find a fertile field. He wanted to visit the eye hospitals, but to his great surprise he learned that there were none; that eye diseases were still incorrectly diagnosed; that trachoma was mistaken for epidemic spring catarrh of the eye; and that there was not even an ophthalmological society. The Egyptian Government, torn to pieces by internal troubles and British domination, was not ready to assume its social obligations toward its subjects.

In the late spring of 1901, when Max Meyerhof returned from Egypt to Germany, he already had made his decision and his plan for the future. Here was a land grabbed by the British and French who looked out only for their own "selfish" interests; a land where foreign rule and Europeanism became the enemies of the natives; a land where he thought that the superiority of German products ("Überlegenheit des deutschen Erzeugnisses"), coupled with the proverbial German honesty ("Ehrlichkeit") and reliability ("Zuverlässigkeit") could do wonders; a land which he felt was in need of German research work ("deutsche Forscherarbeit"). He still had the illusions of a 27-year old and he could not foresee that he would witness the doom of his native land and the reckless destruction of the fine academic spirit of old Germany with which he was imbued.

In August 1901 he was still in Bromberg with Dr. Augstein and Dr. Hecht. At the end of the year, some time in November, he became voluntary assistant at the "Universitätsaugenklinik" (Ophthalmological Clinic) in Breslau where he learned about eye refraction from Prof. Heine and studied the pathology of eye tumors under the guidance of Prof. Uhthoff. During his assistantship in Breslau in 1901 and 1902 he wrote several histopathological articles published in German ophthalmological journals. At the end of the year 1902, he began his eye practice in Hannover, preparing himself for emigration to Egypt.

2. *First period in Egypt, 1903-1914*

In October 1903 he arrived at Cairo, properly equipped with letters of recommendation to the members of the German colony and to the German heads of various medical institutes. With his agreeable personality he easily adjusted himself to Egyptian social conditions, and gained the friendship of many. He began his ophthalmological practice with a certain Dr. Herff in 1903, and joined the Ophthalmological Society of

Egypt founded less than a year before his immigration, on December 20, 1902. For this reason he was counted as a charter member of the society and was helped by his fellow members in establishing his private practice.

This was, however, not so easy, especially in Cairo, the city of many nations and many languages where a physician had to be a real linguist, and where he met competition even in the post-card seller at the corner of his house whose side line was to sell eye-glasses. He learned to speak Arabic, and, in spite of the rising nationalism in the country, he became a doctor favored by many and was called for consultation by various general hospitals.

His patients were chiefly natives, especially Copts, of the middle class, most of them from Cairo, some coming from Upper Egypt. He found a veritable museum of eye diseases in his office; purulent conjunctivitis, corneal granulations of all types, vernal conjunctivitis, eyes affected by leprosy, tumors of the eyelids, all types of foreign bodies, but chiefly trachoma in all its stages. Most of the operations he had to do were to correct the sequelae of trachoma by canthoplastics, entropion operations, and similar surgical interventions. When for a period, from March 1911 to 1914, he became the chief of the newly opened Eye Department of the Abbas Hospital, his surgical work increased greatly. There were three days a week designed for operations, often consisting of nothing else but correcting trichiasis in 12-14 cases or more a day.

How lucrative this practice was it is hard to guess. There was not much one could ask from a poor fellah working as a laborer for some German archeological mission, or from a member of a Nubian Bedouin tribe. Meyerhof's practice was large, it is true; but he chiefly wanted material for his ophthalmological research. During the period from 1903 to 1914 he examined about 30,000 patients, an average of eight a day. He could gain only experience but no wealth, since Egypt was always an expensive country for the medical practitioner. Throughout his pre-World-War-I stay in Egypt, Meyerhof experienced the difficulties of practice, the high cost of renting private clinics and personnel, and he saw that, with the existing low fees for doctors, one could hardly prevent losing money.

But there was much to learn from one's patients about the customs of Egyptians, the manners of living, the strange rituals of hospitality, the medicaments traditionally used by the people. There was the Sheikh of the Senúsí sect whose religious rules did not permit the use of anesthetics, not even instillation of cocaine in an eye to be operated on, and who endured a painful eye operation bravely but with praying lips. There was the 16-year old girl, the daughter of a Moslem, who could not be bathed

because the custom demanded she should be first led to the "hammam" on her wedding day. It was surprising to find that the old Greek practice of incubation still existed in a medieval Arabic and Jewish version, and modern Egyptian people, when sick, went to sleep in the cellar of a sacred mosque or in the old synagogue of Maimonides. His practice often called him to harems of Egyptian officials or merchants where, after examination of the sick woman, he was either besprinkled with perfume or given a flower just to carry away some pleasant memory of the house.

While building up his private practice and gaining experience in folk customs, Meyerhof spent most of his time before the first World War in ophthalmological research. From 1904 to 1914, he was chiefly Meyerhof, the ophthalmologist. The large number of his professional publications and his attempts to increase the ophthalmological service in Egypt brought him the honor of presidency in the Ophthalmological Society of Egypt for the year 1908-1909.

His first relationship with medical history, largely at the stimulation of Julius Hirschberg, was a search for lost or unedited Arabic manuscripts in the libraries of the Khedive and of the Azhar mosque in 1905. Later on, his frequent visits to the libraries of Cairo, and the friendship with the scholarly Ahmad Taimur Pasha and the orientalists of many countries made him the eminent medical historian of Arab medieval medicine in the second half of his Egyptian stay. The peak of his medico-historical activity developed only after World War I.

During the first period of his Egyptian life, Meyerhof witnessed the political and social changes gradually taking place in his adopted country. The nationalism and the hatred against foreigners and non-Moslems began anew in 1904 under the leadership of young Muṣṭafa Kámil, provoked by the agreement between France and England and their "Entente cordiale" on April 8, 1904. Egypt was left at the mercy of the British, and the resentment was so great among the natives against the administration of Lord Cromer that the fellahs killed an English officer on June 13, 1906. The English governor had to be replaced in April 1907, but his successor, Sir Eldon Gorst, was also unable to soothe the hurt feelings of Egyptians. A year later, on February 10, 1908, Muṣṭafa Kámil died of tuberculosis, and the people believed that he was poisoned by the British. His burial became a national demonstration against English occupation.

The Egyptians saw that one sure way to get rid of the British was to raise the level of national education and the general standard of living. In 1908, therefore, the Government of Egypt established the first modern

university of the State, since for higher education there was practically no school. An old Arab university for the study of Islamic sciences had been in existence since 844 A. D. in old Cairo called el-Fustát, and after the foundation of Cairo in 969 A. D. it was transferred and attached to the Azhar mosque. A medical school in the Qaṣr-al-'Aini was established in 1837 when Muḥammad 'Alí, the first wáli of Egypt (1801-1848) ruled the country. This was an institute for the education of eye doctors and for the study of eye diseases, founded by the French Clot Bey, and staffed by European scientists. Parallel with the establishment of the State University of Egypt and other schools, there was the desire to alleviate the lot of the poor by extension of the hospital services, and establishment of schools for the blind.

There were several charity schools for the blind functioning but the Government ordered them closed, except two institutions: one in Zaitun, and the other in Alexandria (established 1898). As already mentioned, Meyerhof did not find any eye hospital in Egypt on his tourist visit in the winter of 1900-1901. In 1902, the English philanthropist, Sir Ernest Cassel, donated 40,000 pounds for the erection of eye hospitals, but the money was not sufficient for permanent buildings. In 1903, the year of Meyerhof's arrival in Egypt, the Egyptian Government invited Dr. A. F. MacCallan from the staff of the Royal London Ophthalmological Hospital to organize traveling tent ambulatories with the aid of the Cassel fund. Two such tent hospitals were created and equipped, one for Upper Egypt or the Delta region of the Nile, and one for Lower Egypt. But they were of little help when millions of fellahs, blind or trachomatous, had to be reached, and the State itself did nothing but stand by with oriental indolence.

The rise of nationalism was therefore beneficial and welcome even for the organizational efforts of Meyerhof. From 1905 on his demands were essentially the same on the medical side as those of the nationalists on the political side: that is, 1) campaign against superstition, quackery, and indolence of Egyptian natives; 2) education of Egyptians to cleanliness, and better care of water supply; 3) proper distribution of expert doctors in the whole country for the control of glaucoma and trachoma; 4) establishment of many hospital wards for eye diseases. In 1908, during his presidency in the Ophthalmological Society of Egypt, he could see with joy that a new eye hospital was established at Tanta, and that the Egyptian Parliament contemplated a bill for the general extension of hospitalization. It is not unlikely that Meyerhof's efforts were at least partly responsible for the action of the Egyptian Parliament, since one of the

members of his society was the influential Elui Pasha (died 1918), the Inspector-General of the Egyptian Ministerium of Public Instruction, himself an ophthalmologist. On February 20, 1909, at the annual meeting of his society, Meyerhof also suggested the regular inspection of school children's eyes, and a Congress of the Friends of the Blind (typhlophile) to be held in Cairo.

By the year 1912, Egyptian nationalism was gradually turning into a boycott of the foreigners. The anti-foreigner feelings were further incited by the Balkan War. On January 18, 1913, a meeting was held by certain ultra-nationalist doctors who demanded a reform of medical practice in Egypt, and proposed a syndicate of native physicians. The leader of this movement was an Arab physician who organized the boycott against Italian and Greek shops and foreign physicians. The grievances of native doctors were just. There were not more than fifty native physicians who graduated each year, while the so-called " Capitulations," which secured privileged legal status for foreigners, allowed the immigration and settlement of many foreign graduates. It often happened that a native doctor who could not pass his examinations in Egypt went to America to obtain a diploma which, according to the infamous " Capitulations," gave him the right to practice. There was also the case of the young Egyptian doctor who graduated in England and was a member of the Royal College of Surgeons. He was attached to a hospital in Egypt; in the absence of his chief, he performed a prostatectomy, removing by mistake even the ends of the ureters which he hurriedly pinched off the prostata, after the closure of the abdominal wound, in order to hide his ignorance. The general situation was not better among dentists practicing in Egypt, and, as Meyerhof remarked in a letter to the *Medizinische Woche*, there were not more than eight regulars among the 50 dentists doing business in Cairo. The native doctors demanded, therefore, the abolition of special privileges for foreigners, and they openly excited the Egyptian people to visit Arab doctors only. This turn of nationalism resulted in a very serious economic loss for many foreign physicians, the more so because the Balkan War kept away the usual annual tourists. More and more German doctors complained; there were six in Heluan, and three in Assuan without any practice.

There is very little a foreigner can do in his adopted country when the wheel of nationalism turns crushingly upon him. A little group of the better educated foreign doctors tried to organize themselves for mutual aid and consolation. The group was originally established in 1909 as the Société internationale médicale of Cairo, instigated partly by Dr. H.

Peretz, a newcomer to the foreign colony of doctors, former professor at the University of Montpellier, and director of the eye clinic of the hospital of the Société protectrice de l'enfance. At the end of 1912, the society decided to publish a journal of its own under the editorship of Dr. Peretz. The first number was issued in January 1913 with the title of *Revue médicale d'Égypte*, containing original articles, book reviews, and abstracts of foreign articles. Meyerhof was also on the editorial board of the magazine, and contributed several original articles and many abstracts to the short-lived journal. Its publication was not mentioned in the Egyptian papers, which even refused to criticize or review it, while the advertising agents in Cairo did not accept any subscription for the *Revue*, which for lack of funds, died in its first year.

In the summer of 1913, Meyerhof had a two month's period of rest when as a delegate of the Ophthalmological Society of Egypt he attended the meetings of several scientific bodies in Europe. On August 2, he was present at a session of the Société belge d'ophthalmologie held in Ghent. Four days later he was in London at the opening of the 17th (and last) International Congress of Medicine. He spent some time in Germany where the friends and pupils of Julius Hirschberg were then planning a celebration for their master who was seventy years old. At the end of September, Meyerhof was back again among the troubles of Egypt.

Though the early part of 1914 brought back the tourists to Alexandria and Cairo, the tension among the nationalists did not relax, and the status of foreign doctors did not improve. Several of the younger native ophthalmologists made a resolution to report their cases in Arabic for the Society's bulletin. Two of them were members of the Egyptian Parliament, where they introduced various bills restricting the practice of foreigners, while in the Arab daily papers they launched an open campaign against the European practitioners. Meanwhile the general economic and moral situation of the country was at its lowest. Owing to the insufficient fertilizing flood of the Nile in 1913, the country people were near starvation, while vice and crime increased in the larger cities. In Cairo, robbery, rape, and murder became a common event, partly due to the almost unrestricted sale of hashish ("mansúl").

This was no longer the Egypt Meyerhof had seen in his youth. He was now forty years old, a married man since 1906, he came to realize that struggle and weariness is the lot of anyone who decides to settle down in the Near East ("Kampf und Mühsal harrt desjenigen, welcher sich zur Niederlassung in nahen Orient entschliesst"). When the German consul called him in July 1914 to volunteer his medical services for the

German Army, it was not hard for him to leave Egypt behind. He was still a German citizen, and his choice was either a hospital in Germany or a British concentration camp in Egypt. He packed away his books and manuscripts, closed up his house, and through Palestine, Syria and Turkey, returned to Germany.

3. *War years, 1914-1922*

During his military service, his chief work was that of an ophthalmologist attached to a base hospital. He spent his time mostly in a Hannover hospital where, from November 1914 to the end of the World War, he collaborated with Dr. Härtel, Dr. Weber, Dr. Plaut, and others. There was time to write several case reports, even to visit several libraries in Hannover and Göttingen, Berlin, and Erlangen, and to collect material on Egyptian medical history.

When the World War ended, his return to Egypt was still impossible. On December 14, 1914, Egypt became a British Protectorate, and the Khedive, Abbas Hilmí, was deposed. The new ruler, Hussein Kamel, called the Sultan of Egypt, died on October 9, 1917, and was succeeded by Ahmed Fuad. The trouble with the nationalists was still not over. Indeed, the Egyptian nationalistic movement under the leadership of Sa'd Zaglúl Pasha flared up immediately after the armistice in November 1918, now with a demand for independence on the basis of Wilson's principles. The British arrested the Egyptian leader, with three of his associates, in March 1919 and deported him to Malta, then to Seychelles, and to Gibraltar. Yet, the political trouble continued in spite of British martial laws and other oppressive measures, until finally on February 28, 1922 the British gave Egypt a nominal independence, made it a kingdom with Fuad sultan as its first king, with the restriction that the Suez Canal and the Sudan remain British possessions and that the right of foreigners as well as of Egyptian minorities be still under British protection. It was now politically safe for Meyerhof to resume his practice and research in Cairo.

While in Germany, he kept an office in Hannover but spent most of his time among orientalist scholars. There was Prof. Moritz, Director of the library of the Oriental Seminar in Berlin, whom Meyerhof first met in 1905, when the professor, as the head of the Khedival Library in Cairo, helped him to search for Arabic ophthalmological manuscripts. There were many others to help and to encourage him in his studies of Arab medicine: Eilhard Wiedemann and Stigler in Erlangen, Ernst Seidel

in Meissen, Seligmann in Hamburg, Horovitz in Frankfurt, Mittwoch, Georg Schweinfurth, Schäfer, Frank, and Ruska in Berlin.

4. *Second period in Egypt, 1923-1945*

When he returned to Egypt in the early part of 1923, he found that his almost ten-years' absence from the country made him a stranger, a newcomer, with only a few of his old friends left. His library was dissipated, and many of his notes lost. His old practice was gone, and his position in the Abbas Hospital filled by a native. Even in the Ophthalmological Society though he had been its charter member since 1903 and its president in 1908-09, he was considered a stranger; on March 2, 1923 he could reenter it only as an elected new member. His chief consolation during the following bitter trying years was the friendship of Dr. Peretz. Together in partnership, the two friends practiced for almost eight years in the Emad ed-Din Street. Only in 1930 was Meyerhof again financially able to keep his own office on the income of an independent practice, since the number of eye doctors had meanwhile greatly increased. There were 250 of them in 1931, only one-eighth of them being foreigners.

The opportunities for ophthalmological research increased when the Egyptian Government decided to use certain funds, left over from the World War, for the erection of a special ophthalmological laboratory. Dr. MacCallan was entrusted with the planning of a suitable building and the proper equipment of the new institution. It opened on March 7, 1924, with many modern facilities for an investigator who wanted to do bacteriological or histo-pathological work. Yet, Meyerhof's chief interest turned now to medical history. He still read his annual ophthalmological paper at the society, and, after restitution of his charter membership status in 1926, he even represented his society at international meetings. He was still the eye doctor during the day, but the free hours of his nights were devoted to the study of Arabic manuscripts, Arab medicine, botany and pharmacology, and, from 1928 on, to the fates and lives of Jewish physicians who have practiced in the medieval Arab Empire.

The result of these studies was an almost uninterrupted series of publications partly in book form, partly in the form of shorter or longer articles, critical essays, notes, and reviews appearing in various languages and in many medico-historical or orientalist journals. As these publications grew in number so did the honor and recognition given to Meyerhof. In 1928 the University of Bonn made him an honorary Ph. D. In 1931, he became an honorary member of the Royal Society of Medicine, and

his inauguration paper on Napoleon's Egyptian campaign was read to the society by his old friend Dr. MacCallan on November 4. In the same year he was invited to be a member of the Rotary Club of Egypt. Soon afterwards in 1933, the Scientific Academy of Egypt (Institut d'Égypte) made him first its member then its vice-president. On March 24, 1936, at the invitation of the Hebrew University, he lectured in Jerusalem. The next year, his old society of Egyptian ophthalmologists also honored Meyerhof by transferring his name to the list of honorary members, since the Society remembered what in 1909 one of its members, Nazmí Bey, said, with slight irony, of Meyerhof's early medico-historical attempts ": C'est admirable de voir un Occidental *nous* offrir l'histoire de l'oculistique orientale."

It is also said that in 1932 he was invited to the University of Leipzig to take over the chair of medical history from Prof. Sigerist who at that time had been called by Prof. Welch and the Johns Hopkins University to become the head of the Institute of the History of Medicine in Baltimore. But Meyerhof had no desire to return to his native country, where the political and intellectual life had been already overcast with the shadow of growing naziism. After 1935 he completely discontinued his relationships even with the scientific life and journalism in Germany.

His medico-historical activities brought him also in contact with many notables and scholars in Egypt. The wealthy Taimúr Pasha, who died April 26, 1930, had been Meyerhof's old patron and friend since 1905; it was his private library which housed the largest number of old Arabic manuscripts around which Max Meyerhof's historical research centered. Among the scholars in Egypt there were many who offered Meyerhof philological help, some of whom became his standard collaborators for some time. During his first Egyptian period, Meyerhof's chief aid was Dr. Prüfer, dragoman of the German consulate, with whom he published several articles until 1914 when the scholarly consular official was transferred to another place. Another of his translating aids was Abd el-Aziz Effendi Fahmí. In 1928, Meyerhof became acquainted with the Catholic father, Paul Sbath, who owned a large collection of Arabic manuscripts and was an excellent orientalist. There was also Gorgy Sobhy, professor at the medical and philological faculties of the Egyptian University; Joseph Schacht, who came as a refugee from Germany in 1935; then Paul Kraus, a pupil of Ruska, also a refugee orientalist, who made himself famous with his Rhaziana.

The last few years of Meyerhof's life were again disturbed by another World War and the persecution of his race. His interest turned to Jewish

affairs, to medieval Jewish physicians whose history was still unwritten, especially to that great Jew of the 12th century, the second Moses, whose life ended in Cairo, Moses ben Maimun. His last great work was a glossary of the materia medica of Maimonides published in 1940, containing the Arab text and the French translation which Meyerhof made with the help of Prof. Schacht.

His next plan called for the critical edition and translation of a manuscript of Ibn Gami', with the collaboration of Paul Kraus. But Kraus suddenly died on Oct. 17, 1944, soon to be followed by Meyerhof on April 20, 1945, and by the third of the triumvirate, the Reverend Father Paul Sbath in October 1945. Their association is the best illustration of the principle that Meyerhof announced in one of his lectures before the Institut d'Égypte: "La pensée scientifique ne connait ni ghetto, ni fanatisme!".

III. Scientific Work and Publications

Max Meyerhof was an active writer for about forty-seven years, from 1898, when he published his medical dissertation, to the time of his death, his last, and to me the most interesting, publication being issued posthumously in the July number of this *Bulletin* (1945, 18: 169-178). According to the method of counting, an analyst of his literary activity may find the total number of his publications between 200 and 300. A bibliography of Meyerhof's writings has been published by the Hebrew University in Jerusalem on the occasion of his seventieth birthday; it includes over 300 publications and monographs. For the present analysis a collection of separates and monographs was used which was recently purchased for the Army Medical Library. This collection included 271 items according to the sale's list. By rearranging this collection, and omitting those which were reprints of the same article in several journals, I reduced the total figure to 262.

Of the 262 publications, 73 deal purely with bacteriology or ophthalmology; 109 are of interest to medico-historians; 25 are miscellaneous reports, feuilletons or general works; 50 are book reviews, and 5 are obituaries.

Dividing the total production of Meyerhof according to the four periods of his life, it is evident that his main work from 1898 to 1902 was bacteriology and ophthalmology (9 items) at a rate of about 2 publications a year. During his first Egyptian period (1903-1914), he published 35 original articles on ophthalmology, 18 on the history of ophthalmology,

7 miscellaneous notes, and 1 book review. During the World War, while in Germany, he wrote 11 ophthalmological, 8 medico-historical, and 7 miscellaneous publications. In the second Egyptian period of his life (1923-1945) he published 18 articles on eye diseases, 83 others related to the history of Arab science and medicine, 11 miscellaneous reports, 49 book reviews, and 5 obituaries. Considering that almost all of the book reviews deal with works related to the Arab arts and sciences, quite a few being careful analyses with suggested corrections, there cannot be any doubt that after 1923 Max Meyerhof was essentially an historian and philologist, while his ophthalmological activity was mainly concentrated to the first two periods of his life.

1. *Ophthalmological studies*

During his postgraduate studies of ophthalmology, from 1898 to 1903, Meyerhof was chiefly the reporter of unusual cases of eye diseases, or of the operations of his chiefs. The earliest of these reports includes three cases of retinitis hemorrhagica with secondary glaucoma observed at the Gutmann Clinic in Berlin (*3*). Another one describes various types of uveal sarcoma from the clinic of Uhthoff (*4*). Dr. Augstein's operative skill is commemorated in a paper; it includes three instances of blepharoplastics in which a flap operation was performed, and a case of symblepharon in which vaginal mucosa was used for plastic reconstruction of the conjunctival sac (*5*).

In the early years of the 20th century there was much discussion about the treatment of progressive myopia. The eye doctors of the Breslau Clinic believed that a full correction by eyeglasses might check the progress of myopia. The question could not be answered in any other way but by a statistical study. While the clinic did not have sufficiently large statistical material, Meyerhof remembered that Dr. Augstein in Bromberg had his records for almost 18 years. These records contained only 320 myopia cases, however too small a number for making any definite conclusion (*6*).

More interesting was the almost unique case of cavernous lymphangioma observed by him in a small Polish boy in Bromberg, especially since it was Meyerhof's first major eye operation. He excised the tumor in five pieces, and found under the microscope that there was an extensive involvement of the subconjunctival tissue by the tumor (*7*). Another of his articles was perhaps his first shy reach back into the past when he called attention to a forgotten paper of Albrecht von Graefe in which this author mentioned that even an absolutely rigid pupil will show miotic

contraction when the eyelid is closed with some force (*8*). The last article of Meyerhof's early period is a histological study of sarcoma cases of the iris and ciliary body which he observed during his assistantship in Breslau (*9*).

In 1903, when Meyerhof arrived in Egypt, the knowledge of various ophthalmias was still in a very confused state, and nothing was known of the inclusion bodies, of the various stages of trachoma, nor of the relation of acute eye infections to each other. It was only in 1907 that Prowazek described his chlamydozoa and attempted to relate them to the causation of trachoma.

Meyerhof, with his bacteriological and histopathological training, was eager to clarify the many doubtful points, and from 1903 on it became his practice to make smears of conjunctival secretions in cases of acute ophthalmia, to stain his smears with methylviolet, Löffler's methylene blue, and the Gram stain. In doubtful cases he made cultures on blood-serum or agar medium. Not having any thermostat, he carried his inoculated tubes to the Hygienic Institute of Cairo, the head of which was a German scientist, Dr. Bitter, who not only offered help to the young German research worker, but also lent him a thermostat to carry back to his office. He also provided young Meyerhof with sufficient stock of properly prepared culture media.

Other members of the institute became interested in his studies, especially Dr. Dreyer, the German-born sanitary inspector of Cairo, and bacteriologist of the Egyptian Government. He offered his aid in making microscopical sections and photographs of any kind.

With the aid of his compatriots, in 1905 already, Meyerhof thought that he had solved the mystery of a peculiar behavior of Egyptian acute ophthalmia which usually came every spring with the hot khamsin wind and spread in epidemic proportions. He believed (*10*) that these epidemics are just exacerbations of conjunctivitis. Their cause was the Koch-Weeks bacillus which during the winter would hibernate, so to speak, in the conjunctival sac, and would regain its full activity when the outside hot temperature raised the conjunctival temperature to an optimum for bacterial growth. Similarly he thought that the gonococcus was able to remain in the conjunctival sac without causing any infection until the flood of the Nile came after the hot winds, and the spring epidemic of Koch-Weeks ophthalmia was followed by a summer epidemic of gonorrheal blennorrhea (*10, 27*).

Seeing so many cases of ophthalmoblennorrhea, he became suspicious that there might be other ways of spreading this eye infection than the

well-known routes of transmission. Flies especially seemed to be suitable vectors of gonorrhea from one eye to another. Meyerhof began to catch the flies on the faces of little children, but he soon found that the investigation would be inconclusive regardless of its results. With the oriental's unwillingness to have his genitals examined, the other possible channels of transmission could not have been excluded from the list of etiological factors.

His observations of climatic factors and Egyptian eye diseases led him in 1909 to the conclusion (*16*) that meteoropathological influences are in the country responsible for not only the acute ophthalmias but also for such diseases as pterygion, glaucoma, etc.—an old theory which was later (1913) accepted and supported by Arnaldo Angelucci, professor of ophthalmology at Naples.

In connection with these bacteriological studies, he was able to define more clearly the etiology of pseudomembranaceous conjunctivitis, which, in his 110 cases, was caused by Koch-Weeks bacillus, gonococcus, diphtheria bacillus, and especially streptococcus, the latter type being of the most unfavorable prognosis (*15*). Vernal conjunctivitis was recognized correctly by Axenfeld in 1907. A few years later, Meyerhof showed that it was not unusual in Egypt, and that it might also occur in several members of a family (*30, 31*). He called attention also to the frequency in Egypt of orbital cellulitis caused by Staphylococcus (*42*).

His main ambition was to discover the causative agent of trachoma. Many months were spent by him in searching for the possible bacterium. Already in his Bromberg years near Poland his interest in this eye disease became clear. In Egypt he continued his trachoma studies by bacteriological, clinical and statistical methods. In 1906 he examined the eyes of 215 fellahs who were engaged in work at the Gizeh pyramid and found that 211 of the workers were infected with trachoma. In the same year, Dr. Schacht in Assuan made it possible for him to look at the eyes of all members of a Nubian bedouin tribe. Later, Meyerhof made similar serial examinations on the students of a Cairo school and found that 50 out of 102 had trachoma.

But, regardless of his and Dr. Dreyers' bacteriological studies of trachomatous eyes, the trachoma bacillus could not be found. The pathological evidence of infection, however, could be seen in a few instances. Meyerhof observed several cases in which the trachomatous pannus on the cornea was surrounded by follicles formed at the corneal limbus (*10, 12*). These follicles he accepted as a definite sign of the infectious nature of trachoma.

In 1907 Prowazek discovered his chlamydozoa, and soon afterwards, Herzog described the initial bodies. Meyerhof and Dreyer were able to find the same bodies in 1910, and Dreyer even thought that they were in some relationship with the small bodies occurring in piroplasmosis of cattle. They attempted to prove or disprove the etiological role of chlamydozoa in trachoma by inoculation of the alleged causative agent into monkeys. Yet, these animal inoculations did not show much (*20, 21, 22*).

Though Saemisch had proved already in 1876 that trachoma was different from follicular conjunctivitis, and though Axenfeld in 1896 had the courage to demonstrate before an ophthalmological congress the difference by inoculating follicular conjunctivitis into his own eye, the knowledge that trachoma was a disease *sui generis* was still not generally accepted. Meyerhof's merit was that, at least for the Egyptian ophthalmologists, he made clear the nature of trachoma, and its various clinical manifestations.

He found that trachoma is a pathological unit (*26*), which may attack any eye because there is neither local, nor acquired nor natural immunity against it (*29, 38, 39*). It may coexist with other acute ophthalmias such as vernal catarrh (*30, 31*), and it does not spare even the young babies (*43*). Though rarely, it may occur in an acute form (*16*), and may cause interstitial keratitis, sometimes with formation of secondary folliculi (*10, 12, 60, 63, 69*). Unilateral cases of the disease are rare, but they occasionally may cause difficulty in diagnosis (*38*). He recommended the classification of trachoma cases according to stages as proposed by MacClallan (*68*), and called attention to the peculiarity that, rarely, trachoma may heal without leaving a visible scar (*72*). In 1914 already he became convinced that inclusion blennorrhea is not identical with trachoma (*43*). For his own practice, he worked out a therapeutic routine (*37*), chiefly consisting of daily mechanical treatment of the trachomatous eye (*71*), including the various surgical interventions as they were indicated by the condition of the eye; and he held that Kuhnt's trachoma operation was especially suited for Egyptian eyes (*54*).

Another of his etiological studies was on myopia, a rather frequent condition in Egypt. Wherever Meyerhof went, to schools, mosques, or bazaars, he saw the Arabs holding books or other small objects of purchase close to their eyes. One of the favorite theories of myopia was that it is the schooling and reading which makes a young child myopic in his adult years. In Egypt, the land of analphabets, this certainly could not hold true. He therefore examined 5445 eyes in 1910 and another series

in 1913, including all Egyptian races, in order to correlate myopia with the variation of the orbital index (*23, 33, 34, 35, 36*). The result of his studies was only the determination of the average orbital index in Egyptians, which he put at 83, but he could not make any conclusion whether the craniometric peculiarities of the Arabs had anything to do with nearsightedness. Meyerhof assumed that myopia must be hereditary in Egypt, due to the stronger curvature of the cornea, and that the childhood corneal diseases may also contribute to weaken the eye and to predispose it to myopia.

Among the more frequent causes of blindness in Egypt glaucoma takes an important place. Meyerhof attempted to show that this disease as well as many others along the Nile has a definite relationship with the hot climate of the land (*16*). He conducted a scientific propaganda for the more frequent use of Elliot's sclerocorneal trephining, which he considered less dangerous to Egyptian eyes than the usual iridectomy (*32, 57*). He also experimented with the adrenaline instillations recommended by Hamburger, but did not have any satisfaction from this type of treatment (*59*). Another one of his papers reported his trials with iridectomia anterior (*62*).

He liked to show his Egyptian colleagues something new whether it was a new technic, or a new treating method, or an unusual case to demonstrate: advantages of radiographic localization of foreign bodies (*14*), a new instrument for chromoptometry (*65*), or the method of rectal narcosis with avertin (*64*).

Among his demonstration of rarities there was a case of keratitis marginalis profunda, probably the second one observed since 1893 when Fuchs described the disease (*17*); a plexiform angiofibroma of the eyelid (*18, 19*); a case of Groenouw's type of corneal degeneration (*25*); cases of corneal leprosy (*13, 58*), of tuberculous iritis (*56*), and even a metallic foreign body which he showed in 1914, a rather rare type of injury in agricultural Egypt, so rare that even the larger ophthalmological hospitals did not consider it necessary to keep a giant magnet for such incidents. Meyerhof used an electric hand-magnet (of Hirschberg) which he had to start into operation by means of galvanic batteries.

In 1911, when Prof. Truc of Montpellier visited Egypt he gave Meyerhof an interesting " publication " edited by a certain Capion. It was the genealogy of the famous Nougaret family, the classical example of heredity of hemeralopia; there were 2137 descendants enumerated on an 85 cm. wide and 10 meter long paper roll, including 134 persons who have been night-blind; their ailment or defect could be traced back to

Jean Nougaret, born in 1637 (*24*). Though such evidence of heredity was quite impressive, Meyerhof became convinced during his military service in the World War (1916) that hemeralopia has always been a war disease, chiefly due to the lack of fresh vegetables (*47*).

All in all, Meyerhof's chief role in Egyptian ophthalmology was that of a vector or transmitter of Western advancements into an oriental land. He considered it the task of any scientific worker to carry and to exchange cultural achievements from one land to another: "Vulgarizing of scientific thought must be . . . the aim of all scientific workers, in order to create the unity of human science and by this a means of mutual understanding throughout the world."

2. *Arabic and medico-historical studies*

In his medico-historical studies, Meyerhof started out where the researches of Hirschberg and his co-workers left off in 1905. His original aim was a limited one: to supplement Hirschberg's excellent summary of Arab ophthalmology (Geschichte der Augenheilkunde bei den Arabern; in Graefe-Saemisch: *Handb. d. Ophth.*, 2. Aufl., Bd 13, Leipzig., 1908). Hirschberg's history was written on the basis of many original manuscripts which this great historian inspected, read, and partly translated into German with the aid of two Arab scholars, J. Lippert and E. Mittwoch.

First, these manuscripts had to be found in European and oriental libraries, many of which have never been properly cataloged. The manuscripts, written in Arabic, Persian, even in Hebrew, had to be copied or photographed; and it took about five years of strenuous work until all the material was gathered together from the libraries in Cairo, Istanbul, Florence, Parma, Paris, Madrid, Leiden, Oxford, Munich, Tübingen, Gotha, Dresden and Berlin.

In 1905, when Hirschberg's synthetic history of Arab ophthalmology was finished, there seemed to be not much further to go but to discover additional manuscripts, or lost works of Arab authors mentioned by the great 13th century Arab bio-bibliographers, al-Qiftí, and Uṣaibi'a. Hirschberg's work was a testimony for what can be done in the field of history of a special science when the historically minded person has both philological background and knowledge of the subject matter. It also showed that when either of them is lacking the historian's conclusions will lead us from the truth, and will create utter confusion, as the example of A. Hirsch, quoted by Hirschberg, made clear.

A. Hirsch condemned the ophthalmological knowledge of medieval Arabs as worthless, though, as Hirschberg proved, neither could he study

the original works nor was he able to understand their contents; Hirsch could not read Arabic, and was not familiar with ophthalmology. An historian of ophthalmology should be an ophthalmologist, as he who undertakes to compose the history of anesthesia should be well versed in anesthesia. Hirschberg's advice is sound and worthy of generalization; a mathematician should not attempt to write the history of botany, neither should a lawyer touch the history of medicine: "Ueberhaupt sollte die Geschichte eines ärztlichen Sonderfaches nur von einem erfahrenen Arzt dieses Faches geschrieben werden, der fähig ist, auch die leisen Anspielungen der alten Aerzte richtig zu deuten" (*Handb. Ophth.*, Leipzig, 13: 243).

Meyerhof felt that he met at least one of the requirements set up by Hirschberg for a medical historian. He was an expert in his specialty of medicine. He was also studying Arabic under the guidance of Dr. E. Littmann, Arabist scholar; moreover he expected help and cooperation from his kind German compatriots in Egypt. Already in 1905, he visited the Khedivial (now National) Library in Cairo, where, with the aid of its director, Dr. B. Moritz, who had also helped Hirschberg himself, and with the assistance of a scholarly native scribe he searched the manuscript collection and made a list of the unedited works of Arab ophthalmologists. Then, accompanied by Dr. Prüfer, dragoman at the German consulate, he visited other libraries such as that of the old Azhar Mosque. Later, on hearing of the private library of Aḥmad Taimúr Pasha, he engaged an Egyptian copyist to transcribe whatever material there could be found on Arab ophthalmology.

When Hirschberg revisited Egypt in 1909, Meyerhof had already prepared a long list of medieval Arabic writings some of which Hirschberg had not seen before. Meyerhof began to translate a few with the help of Dr. Prüfer and a native Egyptian scholar, 'Abd el-Aziz Effendi Fahmí. As his list of unknown and unedited manuscripts grew, he became more and more convinced that, regardless of the careful studies and efforts of Hirschberg and the few other Arabists engaged in the history of science, Arab ophthalmology as well as Arab medicine of the Middle Ages was still a mostly unknown field to both the East and the West.

The few studies he made during his first Egyptian period already revealed so much unpublished material in the private and public libraries that it seemed to him desirable to extend his researches beyond Egypt, to Damascus, Beiruth, and Istanbul especially, and to include in his field more and more of the entire science and art of Islam. His daily life, his strolling among the bazaars of Cairo, and his practice among the common people, made him interested in the customs of the people of the Arabian

Nights, in folk medicine, as well as in the botany and pharmacology of medieval Arabs.

It was quite a common sight for him when 'Abd-al-Magíd, the druggist, in a bazaar of herbs, seeds, arsenic and eye paint, pulled out a 15th century manuscript drug book of Dá'úd al-Antáki, or the prescriptions of Kohen al-Attár, to look up the exact composition of a mixture which his female Nubian customer wished to use as an effective charm. In Cairo, Meyerhof was in daily contact with a tradition reaching back for centuries, into an era long past for the West, which however was still alive, or rather was static here in Egypt,—the Arab Middle Ages.

When the First World War broke out, Meyerhof's historical interest had widened, and his knowledge of the problems became greater. His studies now not only included all branches of Arab medicine and its allied sciences, but through them he became aware of the basic relationship of the Islam with the Greco-Roman and Byzantine cultures. His conversations with German scholars in the post-war years led him to scrutinize the role of Arabs in preserving our scientific heritage. He was able to clear up several of the doubtful points in the early history of Arab higher education by tracing the history of the migration of the once famous Alexandrine School in the unpublished works of medieval Arab historians.

From Germany he came back to Egypt in 1923 with a new ambition: to write a history of Arab medicine on the basis of all available original sources. During his second Egyptian stay, all details of his studies, together with the critical editing of forgotten manuscript texts, his translations and commentaries, the preparation of glossaries and his many partly philological, partly historical essays, even his articles on medieval Jewish physicians in general and on Maimonides in particular, all were directed towards this ultimate aim.

Though he lived in Egypt, he was in no way an egyptologist, and his interest in the ancient history of his adopted land was only secondary, occasionally shown by a book review, or an article on the current archaeological explorations. He made an analysis of the Edwin Smith Papyrus, after it was published, for a German surgical journal (*136*), looked with interest on the 3rd century convex lens which the Michigan Expedition discovered (*124*), or upon the fact that an aqueous solution of saltpetre, found by a Harvard Expedition in a pharaoic tomb, had remained for several thousand years in its original composition as it had been made up by an ancient priest (*107*).

He also liked to wander among old ruins, to take a donkey ride to old wells, or along a wadi to Coptic monasteries. Near Cairo the old walls

of Fusṭāṭ, founded in 640 A. D. by the invading Arabs, offered themselves to his explorative spirit (*99, 100*), as they were carefully excavated under the direction of 'Alí Bey Bahġat (1858-1924), the head of the Arabic Museum (*101, 258*). Anything of real value made by medieval Arabs was an attraction for him, whether a manuscript for his studies, or an astrolabe, with geographical and astronomical inscriptions to read (*102*).

He attempted to understand oriental culture and the entire world of Islam (*184*) in all its customs and institutions, its mysticism and poetry (*183*), its jinnies, asarits and other jealous spirits (*192*), even the belching which was the guest's duty to honor his host after a good dinner (*194*). The devotion of an oriental to his old teacher (*204*), his cult of the holy men ("wáli"), and the veneration of their miraculous graves (*193*), as well as the ecstatic dance of the Rifái dervishes (*198*), were among the topics for Meyerhof to reflect upon and to write about. Several of his articles described the medical and pharmacological knowledge of Egyptian peoples (*93*), their drug trade and bazaars (*96,195, 196*), and their use of narcotics (*191*).

Even in his historical and philological studies, pharmacology and botany claimed his special interest. He discussed the contents of several pharmacological writings of Idrísí (*131*), Gáfiqí (*132,172*), Bírúní (*140*), Maimonides (*150, 151, 173*), and others (*175*), often editing and translating the entire work from a manuscript he found in a library. He analyzed the influence of Dioscorides upon Arab medieval pharmacology (*146*), and the influence of Arabs upon the drug vocabulary of Spain (*152*) and Portugal (*167, 168*). Many of his philological writings had their origin in the desire to correct the available oriental dictionaries, to give the correct etymology of certain drug names, or to trace the exact meaning of a term in medicine or ophthalmology. These philological excursions always had importance for the accurate interpretation of some medieval Arab manuscript he had in hand. He wrote on the "śiśm" (*86, 87*), on "haśiś" (*95*), on "sabal" or pannus in trachoma (*108, 112*), on the meaning of "hydatis" (*90, 113*), of "dardár" (*154*), on "śá'" (*175*) or our tea, also on the earliest use of silver nitrate in the Arab world (*89*). His fondness for dictionaries explains that there are but few of his larger works without a carefully prepared glossary of terms.

Another set of Meyerhof's detailed studies is devoted to the more recent 18th and 19th century history of Egypt and the diseases peculiar to the land, especially as the early travelers and doctors who visited the country reported on these diseases and the measures taken for their control. He described the ophthalmia which debilitated Napoleon's army in 1798

(*142*), the role of British surgeons and French doctors in developing various institutions for the control of eye diseases (*109*), the history of plague from 1788 to 1802 in Egypt and the observations made by Dr. Wolmar, an eyewitness and probably the first describer of cutaneous leishmaniasis ("fièvre d'Alep") (*84*). In the chronicle of Gabartí (1754-1822) he found that dengue fever was known in Egypt since 1779 (*88*), while Qalqašandí's 14th century encyclopedia was probably the first to mention sleeping sickness ("'illat an-naum") as discovered by an Egyptian prince in 1931 (*161*). Meyerhof also scanned the printed reports of early 17th century travelers in Dutch East India and extracted from them the passages referring to tropical diseases (*171*), thereby supplementing the excellent monograph of D. Schoute on the medical services developed in the Far East by the East India Company (*De geneeskunde in den dienst der Oost-Indische Compagni*, Amsterdam, 1929).

While spending his time chiefly in historical analysis, in search for source material and its interpretation, he also produced a number of articles and monographs in which he summarized the details found by himself and others, and related them to a broader period of history. Among his synthetical works there is one on Egyptian folk medicine (*93*), several on the history of eye diseases in Egypt (*74, 75, 76, 94, 174*), on trachoma and its history (*155*), on development of ophthalmology among the Arabs (*114, 115*) and in 19th century Egypt (*109*). His history of optics was based chiefly on the researches of Hirschberg and Eilhard Wiedemann (*98*), whose several papers on Arab science were published in journals not easily available for medical men.

The introduction to his Gáfiqí edition amounts to a history of Arab pharmacology (*172*), containing a long list of medieval authors and references to their works on botany, pharmacology and agriculture. He contributed to our knowledge of the Arab-Greek cultural relations and the fate of the Alexandrian School or scholars in several special studies (*127, 128, 145, 182*) though there is barely a single one of his historical articles and publications without an allusion to, or discussion of, the importance of the Arabs in saving the Greco-Roman advances in science for the West, while this part of the world was in a turmoil of wars, resettlement of migrating peoples, and imbalance of political powers. To be the mediator in the fight of paganism with Christianity, and the bridge between antiquity and a coming new era was the mission of Islam (*134, 156*).

In the 7th century, the Arabs invaded many ancient lands of civilized

culture, but, instead of destroying the foreign institutions that they found they tried to utilize them to their advantage. In the 8th century the School of Alexandria was still in existence (*127*), intact with its library, but it was soon transferred to Antioch by order of 'Omar ibn 'Abd al-'Aziz, one of the Umayyad caliphs (717-720); from there it wandered to Ḥarrán in Mesopotamia. The caliphs and the notables among the Arabs encouraged the translation of Greek scientific books into Syriac and Arabic; they not only established translating schools with the most eminent scholars working in them, but also sent their legates into lands of the Byzantine Empire to purchase medical and other scientific manuscripts. They considered the intellectual legacy of Greece the most precious treasure in their hands, which was carefully nourished in their many universities and institutions throughout the 9th and 10th centuries.

The Arabic language became the language of science through the Near East as well as in North Africa and in Spain under the Islamic rule. Unity of language contributed greatly to the advancement of Arab learning, which reached its peak in the 11th century, with its great cultural centers functioning in Níšápúr, Isfahán, Bagdad, Damascus, Cairo, Cairuan, Fes, Córdoba, and Palermo. But in the second half of the 11th century attempts were already made in the Christian West to regain the scientific heritage and to make Greek-Arab science available in Latin translations for Christian countries of Europe. This undertaking of retranslation continued during the 12th century in Spain and in Sicily, and on this legacy of Islam, often distorted by the successive translations from Greek into Syriac, from Syriac into Arabic and from Arabic into Latin, the culture of the West maintained itself until its 16th century renaissance.

Meyerhof's chief activity was the analytical research of this great medieval Arab culture, and its restoration from unpublished original documents. His merits can be best appreciated by a cursory review of the manuscript and printed writings produced by medieval Arab authors, which served Meyerhof as sources in his historical studies, as references in his commentaries, material to be translated, or text to be published. His manuscript sources were collected chiefly in Cairo libraries, but many of them were sent to him from other libraries in Moslem countries or in Europe and America. The main difficulty in arranging a list of Meyerhof's manuscript sources comes from the fact that he did not adhere to a single method in transliterating Arabic names, neither did he refer to the same author always by the same form of name. The biographical dates he gave for his Arab authors are also often inconsistent.

The following list includes 62 Arab authors with 79 works, many of

them unpublished, with numerical references to the publications of Meyerhof in which he used them as a source of information, or translated and edited them (see the bibliographical Appendix).

1. Abu'l Faraǧ. See *Ibn al-'Ibrí*.

2. Abulcasim. See *az-Zahráwí*.

3. *al-Ainzarbí*. Abú Naṣr 'Adnán ibn Naṣr, -1153. MS. **Káfí fí't-ṭibb**; in Cairo (*77*).

4. al-Akfání. See *as-Sinǧárí*.

5. Alhazen. See *Ibn al-Haiṭám*.

6. 'Ammár. See *al-Mauṣilí*.

7. *al-Anṭákí*, Dá'úd ibn 'Umar, -1599. MS: **An-nuzha al mubhíǧa**; in Cairo (*77*).

8. --- OP.: **Taḏkirat uli 'l-albáb** (Memorial work for intelligent people); printed in 1838, 1865, 1891/92; pharmacological references (*172*); syphilis appeared in the Arab countries in 1501 (*177*).

9. Avicenna. See *Ibn Síná*.

10. Barhebraeus. See *Ibn al-'Ibrí*.

11. al-Baṣrí. See *Ibn al-Haiṭám*.

12. *al-Bírúní*, Abú'r-Raiḥán Muḥammad ibn Aḥmad, 973-1048; worked in Afganistan; OP.: **Kitáb aṣ-Ṣaidana fí't-ṭibb** (Book of drugs); a unique defective manuscript of this work was discovered by Zeki Velidi in Kaisarí (Caesarea) in 1930, copied in 1075 A. D.; now in the library of Brussa; a Turkish edition with Arabic text was published by Şarefeddin Yaltkaya; Meyerhof used the manuscript, prepared a German translation and edited the Arabic text of the introduction, with the biography of the author, and an essay on the pharmacological knowledge of Arabs (*140*); references to pharmacological synonyms (*172*); general analysis of contents, and samples from the text in French (*175*).

13. *Dioscorides*. An Arabic translation of this basic Greek pharmacology was prepared by Iṣṭafán ibn Básil in the 9th cent., and corrected by Ḥunain; MS. Aya Sofíya, No. 3704, still unprinted; Meyerhof discussed the relation of the author to Gáfiqí (*146*) on the basis of this manuscript, and the position of Dioscorides among the Arabs (*173*).

14. Fatḥ ad-Dín. See *al-Qaisí*.

15. Ǧábir. See *Ibn Ḥayyán*.

16. *al-Gáfiqí*, Abú Ǧa'far Aḥmad ibn Muḥammad, -1165; worked in Spain, near Córdoba; OP.: **Kitáb al-adwíyat al-mufradat** (Book of simple drugs).

a) An abridgment of this pharmacological work was made by Barhebraeus in the 13th century; MS. Gotha, No. 1998, dated 1696 A. D.; also in Cairo in Taimúr Pasha's possession; dated 1285 A. D.; the latter copy was used by

Meyerhof; German translation of introduction (*132*), relation to Dioscorides (*146*), reference to Spanish drug names (*152*), unfinished English translation and edition of Arabic text, with many commentaries, and glossary of synonyms; prepared with the collaboration of Gorghy Sobhy (*172*).

b) The work on the abridged version continued from 1932 to 1940; in 1939 Meyerhof learned that there are several manuscripts available of the original unabridged text of Gáfiqí's work, one at the Osler Library (No. 7506?) dated 1256 A. D., one in Cairo (dated 1582 A. D.), and one in the library of Father Paul Sbath; all of them containing 475 articles out of the total 945 (*175*); he used the copy of the Osler Library in his history of Portugal drug names (*168*). The publication of the abridged version was discontinued.

17. *al-Gáfiqí*, Muḥammad ibn Qassúm ibn Aslam, flour. 12th cent. A. D.; OP.: **Al-murśid fí'l-kuḥl** (Guide in the oculistic); MS. Escurial, No. 835 (formerly No. 830); discovered by Leclerc, and mentioned by Hirschberg; no printed Arabic text available; first translation by Meyerhof into French, without editing the text, but with Arabic dictionary and comments; the work was prepared with the collaboration of Mahmúd Sidqí Effendi, and offered by a pharmaceutical laboratory as a gift on the occasion of the International Ophthalmological Congress in Madrid (*143*); also used as a reference in his history of trachoma (*155*).

18. *Galenus*. Several references (*78, 105*) to a summary of Galen's Book on Eye Diseases existing in manuscript copies in Cairo, and Leningrad; it is **Ġawámi' kitáb Ġálínús fí'l-amráḍ al-hádiṯat.**

19. ----. A work of Galen on Medical Nomenclature (Περὶ τῶν ἰατρικῶν ὀνομάτων) has been completely lost in the Greek original; it was transmitted to us only in an Arabic translation made by Ḥubaiś in the 9th century; MS. fragment in Leiden, copied in 14th cent.; notice on this Arabic version (*103*); German abstract, with aid of Joseph Schacht, Ilberg and Mewaldt (*116*); short notice on the German abstract (*129*); full Arabic text with German translation, made with the aid of Maḥmúd Sidqí, of the Azhar Mosque in Cairo, also with the collaboration of Jäger and Deichgräber (*133*).

20. Ğamál ad-Dín. See *al-Qaisí*.

21. *al-Ğaubarí*, 'Abd ar-Raḥím, fl. 13th cent.; OP.: **Kitáb al-muḫtár fí kašf al-asrár** (Book of the chooser in the revelation of secrets); in 1911, translated by Wiedemann; translation of a story from German into English (*181*).

22. *al-Ġazá'irí*, 'Abd ar-Razzáq ibn Muḥammad, 18th cent.; in Algeria; OP.: **Kašf ar-rumúz** (Revelation of symbols); edited by Leclerc, in 1874; reference to this edition in the commentaries (*172*).

23. *al-Ġurġání*, Abú Rúḥ Muḥammad ibn Manṣúr ibn Abí 'Abdalláh ibn Manṣúr, 11th cent.; in Persia; OP.: **Núr al-'uyún** (The light of the eyes), composed in 1087/88; MS. Persian, in Bodleian Library, No. 1575; Hirschberg refers to it and gives contents; reference in history of trachoma (*155*).

24. *al-Ḥalabí*, Ibn Naṣr-alláh, -1669; wrote an encyclopedia of medicine: **Ġáyat al-itqán fí tadbír badan al-insán;** MS. (where?); Meyerhof translates four chapters into French, on chlorosis (III, 25), syphilis or "ḥabb al-afranǧi" (IV, 28), scurvy (IV, 29), and plica polonica (IV, 30) (*177*).

25. *al-Ḥalabí*, Ḫalífa ibn Abí'l Maḥásin, flour. ca. 1270, in Aleppo; OP.: **Kitáb al-káfí fí'l-kuḥl** (Book of the sufficient in oculistic), composed after 1256; MS. Paris No. 1043, dated 1275, discovered by Leclerc; Paris No. 2999; Yeni Ǧámi' in Istambul, No. 924, dated 1560; translated into German by Hirschberg; references in trachoma history (*155*).

26. *al-Ḥamawí*, Muḥammad ibn Aḥmad ibn 'Ali ibn Barakát, flour. 13 cent.; OP.: **Kitáb al-bayán** (The Book of Explanation); MS. Cairo; mentioned by Meyerhof in 1909 as the first Arabic manuscript he began to translate (*77*).

27. *al-Ḥanbalí*, Saraf ad-Dín Músa aṣ-Ṣálihí, date? OP.: **Risálat an-nuríyat fí 'amráḍ al-'ain al-kullíyat;** ophthalmological manuscript found in Cairo (*77*).

28. --- OP.: **Kitáb al-futúḥ fí 'iláǧ al-qurúḥ** (Book of conquest in the treatment of ulcers); MS. found in Cairo (*77*).

29. *al-Harawí*, Abú Manṣúr Muwaffaq ibn 'Alí, flour. ca. 970 A. D.; wrote a pharmacological treatise in Persian; Latin-Persian ed. in Wien, 1830 (Liber fundamentorum pharmacologiae); translated into German by Akhundow in 1893; this translation was used by Meyerhof in several commentaries to Gáfiki (*172*).

30. *al-Ḥarráni*, Abú'l Ḥasan Ṯábit ibn Qurra ibn Zahrún, 825-901, physician and astronomer; OP.:**Kitáb aḏ-Ḏaḫíra fí 'ilm aṭ-ṭibb** (The Book of treasure in the science of medicine); MS. Patriarchal Library in Cairo; edited by G. Sobhy, 1928; prepares comments, discusses contents, and gives a glossary (*130*).

31. --- OP.: **Kitáb fí'l-baṣar wa'l-baṣírat** (The book of vision and perception); MS. Leningrad; Cairo, dated 1197; in 1905, Hirschberg suspected that the work was written by a later author; Meyerhof showed that it was composed after 930 A. D., chiefly on basis of 'Ammar's ophthalmological work (*78, 83, 105*).

32. Hibatalláh. See *Ibn at-Tilmíḏ*.

33. *Ḥubaiš ibn al-Ḥasan*, flour. second half of 9th cent.; the son-in-law of Ḥunain; his ophthalmological work is quoted by al-Gáfiqí (*172*).

34. Ḥunain. See *'Ibádí*.

35. *al-'Ibádí*, Abú Zaid Ḥunain ibn Isḥáq, 809-873; the sheikh of Arab translators in Bagdad; OP.: **Uyún al-anbá' fí ṭabaqát al-aṭibbá,** an important work on the writings of Galen; MS. Aya Sofíya, No. 3590; discovered by Meyerhof, who gave a photocopy to Bergsträsser for further study; referred to in a notice on Galenic writings (*117, 118*).

36. ---- OP.: **Risálat fí ḏikr má turǧima min kutub Ǧálínús,** a list of 129 Galenic works; MS. Aya Sofíya, No. 3631; described by Bergsträsser

in his study on Syriac and Arabic translations of Galen's works (Leipzig, 1925); Bergsträsser's work further analyzed by Meyerhof (*104, 105, 106*).

37. ----- OP.: **Fí'ḍ-ḍau'i wa-ḥaqíqatihi** (On the light and its nature); MS. found by Cheikho in Beirut, and published in Arabic (Maśriq, 1899, 2: 1105-13); from the published text Meyerhof and Prüfer translated the work into German (*81*).

38. ----- OP.: **Kitáb al-masá'il /an-No'mán/ fí'l-'ain** (The book of questions on the eye); a summary of the next work, probably written by a pupil of Ḥunain; MS. available in three different version: a) Cairo, No. 477, of 1453 A. D.; one in possession of Taimúr Pasha, undated; Brit. Mus., No. 6888, of 1486 A. D.; Leningrad, No. 42, of 1481 A. D.; b) Leiden, No. 671, of 1551 A. D.; c) one in the library of Pater Sbath, dated 1671 A. D.; the Taimúr copy was mentioned by Meyerhof repeatedly (*77, 79, 105*), and referred to in his notes on trachoma history (*108, 155*); in 1935, Pater Sbath discussed his copy; a critical edition of the manuscript, with French translation, was made by Meyerhof and Father Sbath in 1938 (*166*).

39. ----- OP.: **Kitáb al-'aśr maqálát fí'l-'aín** (The book of ten treatises on the eye); MS. Leningrad, of 1156 A. D.; Cairo, of 1196 A. D.; Hirschberg had reference to the work in 1903 and 1905, and recognized that the Liber de oculis of Constantinus Africanus is a bad Latin translation of this work; the Latin text was published in the Opera Omnia of Ysaac (Lyon, 1515) and in the 1541 and 1542 edition of Galen's works; Meyerhof found the manuscript in Taimúr Pasha's library, and first made a German translation of the first 'maqála' with the aid of Prüfer, and of the Latin translation (*79, 82*), mentioned the work in several of his papers (*105, 108, 114, 155*), finally made it into English and published it with the Arabic text in 1928 (*110*), with the help of Bergsträsser and others.

40. Ibn al-'Abbas. See *al-Maǵúsí.*

41. Ibn al-Akfání. See *as-Sinǵárí.*

42. Ibn al-Ḥasan. See *Ḥubaiš.*

43. Ibn 'Alí. See *al-Mauṣilí.*

44. *Ibn 'Alí*, al-'Abbás, a Yamanite sultan; ruled 1363-76 (?); OP.: **Buǵyat al-falláḥin fí'l-aśǵár al-muṭmira w'ar-rayáḥín;** an agricultural work; MS. Cairo, No. 155, dated 1371 A. D.; general contents of work, with biography of author (*179*).

45. *Ibn al-'Auwám*, Abú Zakaríyá' Yaḥyá ..., flour. ca. 1200, in Spain; OP.: **Kitáb al-filáḥat;** ed. in Arabic by Banquer, Madrid (1878); translated into French by Clément-Mullet (1864-6); references to French translation (*172*).

46. *Ibn Baḥtíšú'*, Ǧibrá'íl ibn 'Ubaidalláh, 920-1006, in Bagdad; OP.: **Ṭíbb al-'ain.** Perhaps identical with the following author.

47. *Ibn Baḥtíšú'*, Abú Sa'íd 'Ubaidalláh ibn Ǧibrá'íl, -ca. 1058; OP.:

Ar-rauḍa aṭ-ṭibbíya (Medical garden), contains definitions on medical and philosophical subjects; edited by Pater Sbath (Bull. Inst. Égypte, 1926, 8: 21-43); comments by Meyerhof (*120*).

48. *Ibn Baḫtíšú'*, 'Alí ibn Ibráhím, flour. ca. 1067, in Cairo; OP.: **Taśríḥ al-'ain w'aśkálhá wa-mandawát 'ilalhá** (Structure of the eye, its formation and the treatment of its diseases); MS. Leningrad; Cairo; an unknown manuscript mentioned by Meyerhof several times (*78, 105, 155*), who also gave a short content with philological notes (*111*).

49. *Ibn al-Baiṭár*, Ḍiyá' ad-Dín Abú Muḥammad 'Abdalláh ibn Aḥmal, -1248; OP.: **Kitáb ǧámi' al-mufradát al-adwiyat wa'l-agḏíyat;** French translation by Leclerc (1877); Arabic ed. in Buláq; both were used by Meyerhof who described the author's literary activity and revealed his dependence on Gáfiqí (*172*).

50. *Ibn Bikláriš*, Yúnus ibn Isḥáq, fl. 1106; of Saragossa; MS. (where?); referred to in Meyerhof's work on Spanish drug names (*168*).

51. *Ibn Buṭlán*, Abú'l-Ḥasan al-Muḫtár . . . , flour. ca. 1068; of Bagdad. His two treatises written during a medico-philosophical controversy with Ibn Riḍwán were available in several manuscripts (Leiden No. 958; Taimúr Pasha's library; Bodleian Cod. Hunt. No. 502); for a critical edition of Arabic text and English translation, made by Meyerhof and Pater Sbath, the No. 152 MS of the Madrása Aḥmadíya in Mosul was used (dated 1050 A. D.) (*158, 159, 160*).

52. *Ibn Ǧamí' al-Isrá'ílí*, physician of Ṣaláḥ ad-Dín (Saladin); OP.: **Risála aṣ-Ṣaláḥíyya fí iḥya' al-'ulúm aṣ-ṣiḥḥiyya** (Report to Saladin in the revival of healing sciences); MS. (where?), dated 1180 A. D.; English translation of the 1st part of the 2nd chapter containing the most important reference on the transmission of Greek science to the Arabs (*182*). This is the last article known to be written by Meyerhof.

53. *Ibn Ǧazla*, Abú 'Alí Yaḥyá ibn 'Isá, -1100; OP.: **Minháǧ al-bayán;** MS. three copies in possession of Meyerhof; used in pharmacological commentaries (*172*).

54. *Ibn al-Haiṭám*, Abú 'Alí Muḥammad ibn al-Ḥasan, al-Baṣrí, 965-1038; worked in Cairo; OP.: **Kitáb/ or Taḥrír/ al-manáẓir,** the fundamental work on optics, whose original Arabic text is completely lost; its discovery should be the great ambition of every Arabist, according to Hirschberg; known only from its Latin translation (1572 ed.), and from an outline in Arabic contained in MS. No. 2460 in the Paris Bibl. Nat.; outline of the contents of the work has been given by Eilhard Wiedemann (1879, 1882), also by Meyerhof (*81, 92*).

55. *Ibn al-Ḥasan*, Śams ad-Dín Muḥammad, al-kaḥḥal (i. e., the oculist); OP.: **'Ain ad-dawá dirr ćešm;** MS. dated 1690 A. D. (where); mentioned by Meyerhof (*82*).

56. *Ibn Ḥayyán*, Ǵábir, 7th cent.; the alchemist; his Book on Poisons was detected by Meyerhof in the library of Taimúr Pasha, and a copy sent to J. Ruska in Berlin.

57. *Ibn al-'Ibrí*, Abú'l-Faraǵ /Grígúríyús/; his abridgment (Muntaḫab) of Gáfiqí's work was used by Meyerhof in editing and translating this medieval pharmacology (*172*).

58. Ibn Idrís. See *Idrísí*.

59. *Ibn 'Isá*, Śaraf ad-Dín 'Alí -ca. 1010; OP.: /**Risálat/ Taḏkirat al-kaḥḥálín** (Memorial book for the oculists), a work of which Hirschberg remarked that there was nothing better written until the 18th century; MS. Cairo, No. 24, and many others; two in Meyerhof's possession; its Arabic text is still unpublished; Latin translations were edited in 1497, 1499, 1500, and repeatedly; one was published by Pansier in 1903; all of them are bad translations; Hille in 1845 translated the first book from Arabic into Latin; other translations are available in German by Hirschberg, French (first book only, publ. in *Janus*, 1903), and in English by Casey Wood (1936); Meyerhof mentioned the manuscript (*77; 105*) and retranslated its trachoma passages, accompanying them with their Arabic texts (*155*).

60. *Ibn Iyás*. His work is a chronicle available in a manuscript in Leningrad; Meyerhof translated from it a case of trachomatous ptosis (*97*).

61. *Ibn Lúqá*, Qusṭá, 820-912; Christian physician in the 9th century; his manuscript in the Aya Sofíya is a fragmentary list of Galenic works; Meyerhof gives 47 titles of this list (*117, 118, 172*).

62. Ibn Maimún. See *Maimonides*.

63. *Ibn Másawaih*, Abú Zakaríyá' Yúḥanná, 777-857; Christian physician and director of a hospital in Bagdad; teacher of Ḥunain; OP.: **Dagal al-'ain** (Change of the eye); MS. Cairo; Leningrad; referred to by Hirschberg, also used by Meyerhof (*78, 79, 87, 91, 105, 108, 155*).

64. ----- OP.: **Kitáb ma'rifat miḥnat al-kaḥḥálín** (Book of knowledge of the oculists' examination); MS. Leningrad; Cairo; Hirschberg showed that this work is of another author; references made to Taimúr Pasha's manuscript (*78, 79, 105*). No. 63 and 64 are identical works according to Brockelmann.

65. Ibn an-Nafís. See *al-Quraší*.

66. Ibn Rabban. See *aṭ-Ṭabarí*.

67. *Ibn Riḍwán*, Abú'l-Ḥasan 'Alí, al-Miṣrí, 980-1068; OP.: **Fí daf' madárr al-abdán bí'-arḍ Miṣr** (Prevention of bodily injuries in the land of Egypt); MS. Cairo; referred to (*75*), also chapter 6, translated into German (*99*) and English (*100*), with a map, showing the old Fusṭáṭ.

68. ----Three medical treatises written in controversy with Ibn Butlán (q. v.) (*158, 159*).

69. Ibn Salám. See *al-Ḥalabí*.

70. *Ibn Sinâ*, Abú 'Alí al-Ḥussain ibn 'Abdalláh ibn al-Ḥusain ibn 'Alí, 980-1036; OP.: **Al-qánún fí'ṭ-ṭibb;** available in Latin version (e. g., Louvain, 1658); the anatomical part was translated into French (1903), its ophthalmological portions rendered into German by Hirschberg (1902); also several editions in Arabic language (Rome, 1593; Cairo, 1877; Lucknow 19—); Meyerhof used most of the editions; in the trachoma history (*155*; from Hirschberg), in references to pharmacology (*172*; from Louvain and Cairo eds.), and in the history of gynecology written by Joanides (*165*; from French ed. of antomy).

71. *Ibn at-Tilmíḏ*, Amín ad-Daulat Hibatalláh . . . , 1073-1165, in Bagdad; mentions an ophthalmological manuscript in a Cairo library (*77*).

72. *Ibn Yúsuf*, Ṣaláḥ ad-Dín, al-kaḥḥal, flour. ca. 1296; oculist in Syria; OP.: **Kitáb núr al-'uyún wa-ǵámi' al-funún;** MS. Paris, No. 1042, dated 1714 (used by Leclerc); a fragment kept in Gotha, No. 1994; also in Istanbul; German translation by Hirschberg; reference in trachoma history (*155*).

73. Ibn-Zain. See *aṭ-Ṭabarí*.

74. *al-Idrísí*, Abú 'Alí Muḥammad . . . ibn Idrís aś-Śaríf, 1100-1166; Muslim prince and geographer; OP.: **Kitáb al-ǵámi'** (Book of the Universal collection); MS. detected by Helmut Ritter in the Fátiḥ Library, No. 3610, Istanbul; used by Meyerhof in several of his pharmacological and botanical studies, with translation of passages (*131, 152, 168, 172, 175*).

75. al-Isrá'ílí. See *Ǧamí'*.

76. Janus Damascenus. See *Ibn Másawaih*.

77. Jesu Hali. See *Ibn 'Isá*.

78. Johannes Grammatikos (Philoponos). See *an-Naḥwí*.

79. Johannitius. See *'Ibádí*.

80. *al-Maǵúsí*, 'Alí ibn al-'Abbás, flour. ca. 994 A. D.; OP.: **Kámil aṣ-ṣiná'at** (Complete treatise of the art), also called al-Malikí; available in Latin translation (1523, etc.), also in Arabic print (Cairo, 1877); its anatomy has been translated into French (1903), and its ophthalmological part into German (Hirschberg, 1902); used by Meyerhof in his trachoma history (*155*).

81. *Maimonides*, or, Abú 'Imrán Músá ibn 'Abdalláh ibn Maimún, 1135-1204; OP.: **Sarḥ al-'aqqár** (Glossary of materia medica); MS. discovered by Helmut Ritter in the Aya Sofíya library; it is No. 3711, a copy in the handwriting of Ibn Baitár; Meyerhof obtained its photocopy, gave several preliminary notes of it (*150, 151, 152, 168*), and, with the aid of Joseph Schacht and others, published it in Arabic, with French translation, comments and indices (*173*).

82. ---- OP.: **Fuṣúl al-Qurṭubí** (Aphorisms of Maimonides); MS. Gotha, No. 1937, dated from the 13th cent.; its Arab text has been partly printed; Latin translation was prepared from a Hebrew manuscript in the 13th century,

and printed in 1489; Meyerhof translated Chapter 40 of Discourse 25 into English, and published it with the Arabic text (*169, 170*). He also discussed two dietetic treatises of Maimonides (*121*), published a list of his works (*126*), and his biography, with selected chapters translated from the ten treatises of the author (*176*).

83. *al-Mauṣilí*, Abú'l-Qásim 'Ammár ibn 'Alí, flour. ca. 1000 A. D., in Egypt; OP.: **Kitáb al-muntaḫab fí 'iláǵ[amráḍ] al-'aín** (or, **fí 'ilm al-'aiṇ**) (Selection in the [treatment of] eye diseases); MS. Cairo, dated 1150 A. D.; Leningrad (fragment only); Escurial No. 894 (fragment); also translated into Hebrew by Nathan-ha-Meati (MS. Parma, No. 1344), and into Latin (eds. 1497, 1499, 1500; 1904 by Pansier); Hirschberg prepared a German version (1905) for himself; Meyerhof referred to Taimúr Pasha's copy of which he had a transcript made in 1909 (*80, 105, 155*); he also translated the chapters on cataract operation, and published it in four languages, with a facsimile of the corresponding pages of the manuscript (*157*).

84. *Meḫiṭar*. An Armenian who composed a work on fevers in 1187; the Armenian text was edited in 1882, and a German translation made by Seidel in 1908; used for pharmacological references (*172*).

85. *Messihí*. An author of this name is mentioned with a manuscript entitled Kitáb al-iqtidáf kept in Cairo (*77*).

86. Mesue. See *Ibn Másawaih*.

87. al-Miṣrí. See Ibn Riḍwán; also aś-Śáḍilí; also as-Sinǵárí.

88. *al-Munáwí*, Núr ad-Dín 'Alí, 15th cent. physician; OP.: **Wiqáyat al-'aín**, a commentary to the work of as-Sinǵárí; MS. Cairo; Leningrad, No. 176; referred to by Hirschberg; mentioned by Meyerhof (*77*).

89. Naǵm ad-Dín. See *al-Qaisí*.

90. *an-Naḥwí*, Yaḥyá. An Alexandrian scholar who has been known under two different Greek names, Johannes Grammatikos and Johannes Philoponos; Meyerhof showed from Arabic sources that the two are identical (*135*).

91. Núr ad-Dín. See *al-Munáwí*.

92. *al-Qaisí*, Qáḍí Fatḥ ad-Dín Abú'l-'Abbás Aḥmad ibn al-Qáḍí Ǵamál ad-Dín Abú 'Amr 'Uṯmán, flour. 13th cent.(?); OP.: **Kitáb naṭíǵat al-fikar fí 'iláǵ 'amráḍ al-baṣar**; MS. Paris No. 1043, discovered by Leclerc; Cairo, and others; reference in Hirschberg, 1905; French translation, in form of extract, made by N. Kahíl (1928); Arabic text still not printed; Meyerhof uses it in reference in his trachoma history (*155*).

93. *al-Quasúní*, Madyan ibn 'Abd ar-Raḥman, flour. ca. 1628; OP.: **Qámús al-aṭibbá'**; MS. Cairo; used in pharmacological commentaries (*172*).

94. *al-Qifṭí*, 'Alí ibn Yúsuf . . . , 1172-1248; medieval Arab bio-bibliographer; OP.: **Ta'ríḫ al-ḥukamá'**; edited by Lippert, 1903; references to biography of Arab authors (*155*), and Jewish medieval physicians (*162, 163, 164*).

95. *al-Qumrí*, Abú Manṣúr al-Ḥasan ibn Núḥ, flour. 990; teacher of Ibn Síná; OP.: **Kitáb aš-šamsíya al-manṣúríya,** on general medicine; MS. Cairo; German translation made in 1893; reference to MS. (*77*).

96. *al-Quraší*, ʿAlāʾad-Dín ibn an-Nafís ibn Abíʾl-Ḥazm, 1208-1288; physician in Damascus; OP.: **Kitáb al-muhaḏḏab fíʾṭ-ṭibb al-ʿaín;** MS. No. 1307, Vatican Library; edited by Levi, in 1935; reference on trachoma history (*155*).

97. ----- OP.: Commentary on Ibn Síná's anatomy; its Arabic manuscript was studied in Berlin (MS. No. 6224) in 1924 by a young graduating Egyptian doctor, Muḥǵí ad-Dín aṭ-Ṭaṭáwí (born 1896); he published the Arabic text with German translation in his Freiburg dissertation (1924), and pointed out that Ibn an-Nafís discovered the lesser circulation of the blood several centuries before Michael Servetus; Meyerhof reedited the Arabic text, with German translation, and with the bio-bibliography of the author (*147, 148, 149*); it remains a question whether Servetus was familiar with Ibn-an-Nafís' work, perhaps in a Latin translation which is now lost.

98. Qusṭá. See *Ibn Lúqá*.

99. *al-Qúṭí*. Toledo physician; composed an ophthalmological work in 1159-60, using Ḥunain's writings; MS.: the 5th book of the work was discovered by Hirschberg in the Escurial, MS. No. 894; Latin translations (in manuscript) available in Erfurt, No. 280, and in Metz, No. 276; Latin eds. by Pagel (1895) and Pansier (1903); referred to by Meyerhof (*155*).

100. *ar-Rází*, Abú Bakr Muḥammad ibn Zakaríyáʾ, 865-925; physician in Persia; OP.: **Al-Ḥáwí fíʾṭ-ṭibb,** on general medicine in many books; also chapters on eye diseases; MS. Escurial, No. 806; of the eye portion of this manuscript, Meyerhof obtained a photocopy in 1928; only occasional parts of this general medicine have been edited or translated in recent years as the dietetics (Arabic text; Cairo, 1887), the anatomy (French and Arabic; 1903), on kidney stones (French and Arabic; 1896); Meyerhof referred to the Escurial manuscript when writing on the pannus (*112*); he also translated into French and German the cataract operation of Antyllos as transmitted to us by ar-Rází(*141, 144*); furthermore, he published 33 case reports of the author, from the 7th book of this work, in English translation with Arabic text, with the aid of J. Schacht (*153*).

101. ---- OP.: **Kitáb aṭ-ṭibb al-Manṣúrí;** MS. fragment in Alexandria, and many others; available in several early Latin translations; the anatomical part published by Koning, 1903; the 9th book has been translated into German by Bronner (1900); references in the trachoma history (*155*).

102. ----- OP.: **Kitáb al-fáḫir fíʾṭ-ṭibb;** MS. Leiden; Meyerhof used the work in his article on pannus (*112*).

103. *aš-Šáḏilí*, Ṣadaqa ibn Ibráhím al-Miṣrí, flour. 2nd half of 14th century; OP.: **Al-ʿumda an-núríyya/** or **al-kuḥlíya/ fíʾl-ʿamráḍ al-baṣaríya;** MS. München, No. 834; Meyerhof; Leningrad, No. 175; short notice on trachoma (*155*).

104. Ṣaláḥ ad-Dín. See *Ibn Yúsuf*.

105. *as-Samarqandí*, Abú Ḥámid Muḥammad ibn 'Alí ibn 'Omár Naǧíb ad-Dín, -1222; OP.: **Al-asbáb wa'l-'alámát;** MS. Cairo; Leiden, No. 784; Hirschberg translated the anatomy of eye of this author; reference to manuscript (*77*).

106. Śams ad-Dín. See *Ibn al-Ḥasan*; also *as-Sinǵárí*.

107. Saraf ad-Dín. See *al-Ḥanbalí*.

108. *aś-Śayzarí*. OP.: **Niháyat ar-rutba fí ṭalab al-ḥisba;** on the work of the muḥtasib; MS. Cairo, No. 20; French translation of the chapters dealing with supervision of pharmacists (chapt. 17, 18, 19, 33, 36, 370) (*180*).

109. *as-Sinǵárí*, Śams ad-Dín Muḥammad ibn Burhán ad-Dín ibn Ibráhím ibn Ṣá'id, al-Miṣrí ibn al-Akfání (also called al-Anṣárí), -1348; of Cairo; OP.: **Kaíf ar-rain fí aḥwál al-'aín** (Unveiling of the dirt in eye diseases); MS. many in Cairo; references on history of trachoma (*155*).

110. Síyá' ad-Dín. See *Ibn al-Baiṭár*.

111. *aṭ-Ṭabarí*, Abú'l-Ḥasan Aḥmad ibn Muḥammad, flour. ca. 970; OP.: **Kitáb al-'aín fí'l-mu'álagat al-Buqráṭíyat;** MS. Oxford, No. 641 and 644 (4th maqála only), 567; India Office No. 773; Munich, No. 810; Cairo; reference to manuscript (*77*).

112. *aṭ-Ṭabarí*, Abú'l Ḥasan 'Alí ibn Sahl ibn Rabban/ or, Zain/, flour. ca. 850 A. D.; teacher of ar-Rází; OP.: **Firdaus al-Ḥikma** (Paradise of wisdom); contains sections on eye diseases; MS. Brit. Mus. Or. 41; Edward G. Browne wanted to publish this manuscript; it was edited by Ṣiddíqí (Berlin, 1928); Meyerhof referred to this edition (*112, 155*), made a comment, discussed its contents, and prepared a glossary of technical terms (*137*), also a bio-bibliography of the author (*138*).

113. Ṭábit ibn Qurra. See *al-Ḥarráni*.

114. Ṭáhir. His manuscript work entitled **Al-adwiya al-mufrada** is in Cairo; reference to tea (*175*).

115. *aṭ-Ṭúlúni*, Ḥalaf, flour. 877-914, in Egypt; OP.: **Kitáb an-nihayat wa'l-kifáyat fí tarkíb al-'ainíni** (Aims and sufficiency of the structure of the eyes); MS. unknown; referred to by Hirschberg in 1905.

116. *Uṣaibi'a*, Ibn Abí, -1270; of Damascus; medieval Arab bio-bibliographer; his work (**' Uyún al-anbá '**) was printed in Arabic in Cairo (1882), and edited by Müller in Königsberg (1884); Meyerhof referred to these editions many times; he translated the passage on Galen's life (*119, 122*), searched for evidence on private libraries in medieval Egypt (*129*), translated the life of Abú'l Barakat (*139*), referred to the work in compiling his biographies (*158, 172*) of Arabs, and of Jewish physicians (*162, 163, 164*).

117. al-Yamání. See *Ǵurǵání*.

118. *az-Zahráwí*, Abú'l-Qásim Ḥalaf ibn al-'Abbás, -1013; in Córdoba;

OP.: **At-taṣrîf** (Explanation); MS. unknown; Arabic and Latin edition published in Oxford, 1778, also French translation by Leclerc (1861), and German extract by Hirschberg (1908); reference on trachoma history (*155*).

119. Zarrin-Dast. See *Ǧurǧáni*.

A cursory glance upon this list of subjects and sources is sufficient to show that the interest of Max Meyerhof in Arab science was universal. He not only unlocked the doors of many Eastern libraries, but he also detected many hidden treasures, and through his interpretations made them again an integral part of our common heritage. In these activities he resembles the Arab pioneers of the 8th and 9th centuries, and the Christian translators in 11th century Europe. Perhaps, he also wanted to be another Hunain for the East, but his mission was that of a Constantinus Africanus: . . . he opened wide the gate for Eastern wisdom to fertilize again the West.

IV. Appendix *

List of Publications

I. *Ophthalmology*

1. Zur Morphologie des Diphtheriebacillus. Dissertation Strassburg. 38 p. plate. 8°. Münch., R. Oldenbourg, 1898. Also *Arch. Hyg., Münch.*, 1898, 33: 1-34. (Separatabdruck; 34 p.)
   Graduation thesis.
2. Ueber einige biologische und tierpathogene Eigenschaften des Bacillus proteus (Hauser); mit einer Zusammenfassung der wichtigsten Literatur über den Proteus. *Cbl. Bakt.*, I. Abt., 1898, 24: 18-27; 55-61; 148-154.
3. Zur Anatomie des Glaucoma haemorrhagicum. *Zschr. Augenh.*, 1900, 4: 676-688.
   Histological study of three cases of retinitis haemorrhagica observed at Gutmann's eye clinic, Berlin.
4. Ueber seltenere Ausbreitungsarten und Folgezustände von Uveal-Sarkomen. *Klin. Mlb. Augenh.*, 1901, 39: 913-936.
   Three cases: 1. Sarcoma of choroid; 2. Necrotic sarcoma in a case of phthisis bulbi; 3. Leukosarcoma of ciliary body; from the Breslau Eye Clinic.

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* Through the courtesy of Prof. Sigerist, I was able to compare the Appendix with the checklist of Meyerhof's publications compiled by Uri Ben Horin in 1944 (The Works of Max Meyerhof; a bibliography. 28 p. 8°. Jerusalem, Gesher, 1944). Some of the articles listed in this Jerusalem pamphlet I have not seen in the original. To make my bibliography more complete, I include even these publications, chiefly book-reviews, in the Appendix.

5. Lidbildung und Transplantation in der augenärztlichen Praxis. *Arch. Augenh.*, 1902, 45: 97-109.
   Three cases of blepharoplastics; one case of symblepharon; from the practice of Dr. Augstein.

5a. Die Myopie-Operationen der Bromberger Augenklinik. *Arch. Augenh.*, 1902, 44: 135-152.

6. Ueber die Zunahme höherer Kurzsichtigkeit bei Unterkorrektion für die Nähe. *Klin. Mbl. Augenh.*, 1902, 40: 200-210. (Sonderabdruck; 12 p.)
   Statistical study of the records of Dr. Augstein.

7. Lymphangioma cavernosum der Bindehaut und der Lider. *Klin. Mbl. Augenh.*, 1902, 40: 300-319. (Sonderabdruck; 21 p.)
   Operation on an 8 yr. old boy; with histological study of tumor.

8. Albrecht v. Graefes Lidschlussreaktion der Pupille. *Klin. Mbl. Augenh.*, 1902, 40: (Sonderabdruck; 3 p.) Also *Berl. klin. Wschr.*, 1902, 39: 90-91.
   Reference to Graefe's article in *Arch. Ophth.*, 1854, 1: 318.

9. Weitere Untersuchungen an Sarkomen des Ciliarkörpers und der Iris. *Klin. Mbl. Augenh.*, 1902, 40: 465-97. (Sonderabdruck; 33 p., pl.)
   Two cases of leukosarcoma, 1 melanosarcoma of ciliary body, 1 of iris; histological study from the Breslau Eye Clinic.

10. Quelques observations sur les véritables granulations de la cornée. *Bull. Soc. opht. Égypte*, 1906/07, 30.

11. Sur la persistance des agents infectieux dans la conjonctive et son rôle dans les conjonctivites épidémiques d'Égypte. *Ann. ocul., Par.*, 1906, 136: (Extrait; 14 p.) Nov.
    Problems of epidemic ophthalmia; its seasonal appearance, and transmission; relation of gonorrheal blennorrhea to the Nile flood.

12. Ueber Follikelbildung im Hornhautpannus bei Trachom. *Klin. Mbl. Augenh.*, 1908, 46: 353-9.
    Observation of follicle formation associated with trachomatous pannus.

13. Manifestation cornéennes de la lèpre (Démonstration). *Bull. Soc. opht. Égypte*, 1909, 29-31, illust.
    Case of a 31 yr. old Greek, of the Island of Leros, suffering from lepra tuberosa.

14. Radiographie d'un plomb très fin logé dans l'orbite. *Bull. Soc. opht. Égypte*, 1909, 31-32, 2 pl.
    Accident during hunting; patient is a European doctor.

15. Sur l'étiologie des conjonctives pseudo-membraneuses observées en Égypte. *Bull. Soc. opht. Égypte*, 1909, 36-51, pl. Also *Rev. gén. opht.*, 1909, 28: 97 ff.
    Review of 110 cases from the period 1903-08; bacteriological study.

16. Des rapports du climat avec quelques affections oculaires en Égypte. *Ann. ocul.*, Par., 1909, 146: 141-160. (Extrait; 19 p.)
    Meteoropathological study of various eye diseases; lecture held in March 1909 before the Société internationale de médecine in Cairo.

17. Keratitis marginalis profunda (Fuchs). *Zbl. prakt. Augenh.*, 1909, 33: 236-237. (Separatabdruck; 2 p.)
    Probably the second case reported in the literature.

18. Angiofibrome plexiforme des paupières. *Bull. Soc. opht. Égypte* (1910) 1911, 18-20 pl.
    Case of Katherine P., aged 16 yr.
19. Plexiform angiofibroma of the eyelids (translated by Casey A. Wood). *Ophth. Rec.*, 1910, 19: 281-4, 3 figs. (Reprint; 4 p.)
    The same as No. 18.
20. Recherches sur l'étiologie du trachome (with Dreyer, unnamed) *Bull. Soc. opht. Égypte* (1910) 1911, 12-17, 3 pl.
    Observation of the chlamydozoa of Prowazek in cases of trachoma; also on the initial bodies of Herzog.
21. Recherches sur l'étiologie du trachome (with Dreyer). *Rev. gén. opht.*, 1910, 29: 289-293. (Tirage à part; 5 p., pl.) Also *Bull. Soc. internat. méd. Caire*, 1909/10.
    The same as No. 20.
22. Ueber Befunde von Trachomkörperchen in Aegypten (joint author with W. Dreyer). *Klin. Mbl. Augenh.*, 1910, n. F., 9: 476-481, pl.
    The same as No. 20.
23. Ueber Kurzsichtigkeit bei Analphabeten, bei Astigmatismus und Trübungen der Hornhaut in Ägypten. *Zbl. prakt. Augenh.*, 1910, 34: 193-204. (Separatabdruck; 12 p.)
    Statistics of myopia in Egypt; with study of orbital indices; 5445 cases.
24. Généalogie d'une famille atteinte d'héméralopie congénitale stationnaire. *Bull. Soc. opht. Égypte* (1911) 1911, 7-9.
    Demonstration of a published geneological tree of the Nougaret family.
25. Présentation d'un cas de dégénérescence tachetée familiale de la cornée. *Bull. Soc. opht. Égypte* (1911) 1911, 9-13.
    One case of keratitis "en grillage" of Groenouw.
26. (Discussion on trachoma). *Bull. Soc. opht. Égypte* (1911) 1911, 51-2.
    Remarks during a discussion; trachoma is a disease sui generis.
27. Ueber die epidemische gonorrhoische Augenentzündung Ägyptens und ihre Beziehungen zum Trachom. *Klin. Jahrb.*, 1911, 24: 381-414.
    Gonorrhea is responsible for 40% of blindness in Egypt; blennorrhea neonatorum is rare; types of treatment, and prevention.
28. Sur la conjonctivite gonococcique épidémique d'Égypte et ses rapports avec le trachome. (French by H. Peretz) *Arch. opht.*, 1911, 31: 278-294; 373-390, 1 fig. (Extrait; 34 p.). Also *Ann. oculist*, 1911, 148: Mai-Juin.
    The same as No. 27.
29. Ueber wiederholte Ansteckung mit Trachom. *Zbl. prakt. Augenh.*, 1911, 35: 295-8.
30. Conjonctivite printanière et trachome; catarrhe printanier familial. *Bull. Soc. opht. Égypte*, 1912, 10 f.
    Material observed during the years from 1908 to 1911; 49 cases; 25 had also signs of trachoma; familial occurrence of vernal catarrh.
31. Ueber Frühjahrskatarrh bei Trachom und über familiären Frühjahrskatarrh. *Klin. Mbl. Augenh.*, 1912, 50: 641-53, pl.
    The same as No. 30.

32. La trépanation scléro-cornéenne d'Elliot; nouveau procédé opératoire contre le glaucome. (Actualités chirurgicales) *Rev. méd. Égypte*, 1913, 1: 27-8.
    Recommendation of this operation.
33. Étude sur la myopie comme maladie de race et maladie héréditaire chez les Égyptiens. *Bull. Soc. opht. Égypte*, 1913, 10: 11.
    Myopia is peculiar to the Egyptian race; anthropological measurements of the orbital index do not prove much; responsibility of stronger curvature of cornea.
34. Étude de la myopie chez les Égyptiens comme maladie héréditaire. *Rev. méd. Égypte*, 1913, 1: 99-101.
    The same as No. 33.
35. Étude sur la myopie comme maladie de race et maladie héréditaire chez les Égyptiens. *Ann. ocul.*, Par., 1914, 151: 257-273. (Extrait; 17 p.)
    The same as No. 33.
36. Ueber Myopie und Rasse in Aegypten. 1913. (5 galleys.)
    The same as No. 33.
37. Réponse à la communication du prof. Kuhnt; Gand, 2 Août 1913. *Rev. méd. Égypte*, 1913, 1: 285-6.
    Outline of his own method of treating trachoma.
38. Zur Frage der Trachom-Immunität. *Zbl. prakt. Augenh.*, 1913, 37: 161-3. (Separatabdruck; 3 p.)
    Reports a case of unilateral trachoma.
39. Existe-t-il une immunité naturelle ou acquise contre le trachome? (Manuscript; 6 l.) 1913. *Bull. Soc. opht. Égypte*, 1914, 11-14. Also *Rev. gén. opht.*, 1914, 33: 145 ff.
    The same as No. 38.
40. Extraction heureuse, bien qu'effectuée dans des conditions difficiles, d'un gros éclat de fer qui se trouvait dans le corps vitré, nécessité d'avoir des électro-aimants géants. *Bull. Soc. opht. Égypte*, 1914, 8-10.
    Efficacy of the Hirschberg hand-magnet; written for the 70th anniversary of Hirschberg's birth.
41. Glückliche Magnet-Ausziehung nach Hirschberg unter schwierigen äusseren Umständen. *Zbl. prakt. Augenh.*, 1913, 37: 335-8. (Separatabdruck; 4 p.)
    The same as No. 40.
42. Les cellulites orbitaires d'origine staphylococcique. *Arch. opht.*, Par., 1914, 34: 129-136. (Extrait; 8 p.) Also *Rev. méd. Egypte*, 1914, 2: 63 ff.
    Four cases.
43. Beobachtungen über akute Konjunktivitis und Trachoma der Säuglinge in Aegypten. *Klin. Mbl. Augenh.*, 1914, 53: 334-342. Also in: *Ætiologie des Trachoms* (Axenfeld, T.) p. 147-9.
    Statistics of 744 children; observation of 5 cases of inclusion blennorrhea, which is not identical with trachoma.
44. Ueber die Beziehungen des Trachoms zu anderen Augenkrankheiten. *Arb. Internat. Ophth. Kongr.*, 1914, 12. Kongr., p. 1.
45. Blindheit im Orient. *Deut. opt. Wschr.*, 1915/16, Feb. 20. (Sonderabdruck; 5 p.)

Statistics; the social status of the blind in Egypt; some historical notes; the blind in the art; Egyptian welfare institutions; also conditions in North Africa and Persia discussed.

46. Aussichten und Aufgaben des deutschen Optikers im Orient. *Deut. opt. Wschr.*, 1915/16, 479-81.
Prospects for German opticians in the Orient.

47. Nachtblindheit als Kriegskrankheit. *Zbl. prakt. Augenh.*, 1916, 40; 2-6. (Separatabdruck; 6 p.)
Hemeralopia is due to lack of fresh vegetables; historical notes from previous wars (Bonaparte, Malta, etc.)

48. Trachom als Kriegsseuche. *Deut. opt. Wschr.*, 1916, p. 507.

49. Beitrag zur unteren Hemianopsie nach Schädelschuss. *Klin. Mbl. Augenh.*, 1916, 56: 62-65. (Hannover) Jan.
Two cases.

50. Inkongruente Hemianopsie nach Schädelschuss. *Klin. Mbl. Augenh.*, 1916, 57: 390-393. (Hannover.)
The same as No. 49; with a third case added.

51. Toxische Abducenslähmungen bei Grippe. *Med. Klin.*, 1919, 15: 977-8. (Sonderabdruck; 3 p.)
Six cases seen in a Hannover hospital.

52. Beobachtungen über Tabakschädigungen der Sehnerven im Orient und in Deutschland. *Klin. Mbl. Augenh.*, 1921, 66: 107-111.
Recommends the use of cigar holders for prevention; not a single case observed in Egypt.

53. Das Trachom. *Naturwissenschaften*, 1921, 9: 951-958; 972-976; 987-991.
Review of present stage of trachoma research; with historical introduction.

54. Erfahrungen aus der chirurgischen Behandlung des Trachoms in Ägypten. *Zschr. Augenh.*, 1920, 43: 129-141.
Recommends the trachoma operations of Kuhnt.

55. Die Bewertung der bei Grippe vorkommenden Augenmuskellähmungen. *Zschr. Augenh.*, 1922, 49: 208-216.
The same as No. 51, enlarged.

56. Some observations regarding tubercular eye diseases in Egypt. *Bull. Ophth. Soc. Egypt*, 1923, 126-133.
Report of a few cases of endogenous iritis.

57. Glaucoma and high myopia. *Bull. Ophth. Soc. Egypt*, 1924, 35-40.
Recommendation of Elliot's operation.

58. Leproma of the cornea (with Sobhy bey). *Bull. Ophth. Soc. Egypt*, 1924, 60-62 pl.
Case report (the fourth).

59. Notes about the new adrenaline treatment for glaucoma. *Bull. Ophth. Soc. Egypt*, 1925, 41-43.
On Hamburger's method of treatment; not recommended.

59a. Bemerkungen zu A. Feigenbaums ophthalmologischen Notizen. *Klin. Mbl. Augenh.*, 1927, 79: 92.

59b. Some practical hints on the medical treatment of styes and chalazia. *Bull. Ophth. Soc. Egypt*, 1927, 20: 22-25.

60. On some severe forms of trachoma observed in Egypt. *C. rend. Congr. internat. méd. trop.*, 1931, 3: 677-681. Also *Rev. internat. trachome*, 1929, 6: 69-75.
61. Ueber Keratitis trachomatosa profunda. *Liječ. vjesn.*, 1928. (Sonderabdruck; 3 p., pl.)
    Two cases.
62. Erfolge mit der Irido-sclerotomia anterior in verzweifelten Fällen von Glaukom. *C. rend. Conc. ophthalm.*, 1929, 13. Congr., 1: 377-9. (Extrait; 3 p.)
    Six cases.
63. Diseases of cornea and sclera; on interstitial trachomatous keratitis. *Bull. Ophth. Soc. Egypt*, 1930, 23: 17-20, pl.
    Two cases.
64. Some remarks on rectal narcosis with avertin (tribromethanol). *Bull. Ophth. Soc. Egypt*, 1931, 24: 31-35.
65. Exhibition of Peter's ericiscope, a new instrument for chromoptometry. *Bull. Ophth. Soc. Egypt*, 1931, 24: 123-124.
66. Eye disease in Egypt. *Egypt. Gazette*, 1931, Nov. 30, 2.
    A Rotarian lecture.
67. Cinquante ans de progrès ophtalmologique en Égypte. *Fol. ophth. orient.*, 1932, 1: 5-25.
    General survey of the past from about 1869.

67a. Atrophy of iris in early stage of chronic glaucoma. *Bull. Ophth. Soc. Egypt*, 1932, 25: 115-20.

68. Clinical considerations on acute trachoma and follicular conjunctivitis. *Fol. ophth. orient.*, 1933, 1: 262-72. Also *Bull. Ophth. Soc. Egypt*, 1933, 26: 47-60.
    Three cases.
69. On secondary follicular infections in old trachoma. *Bull. Soc. Ophth. Egypt*, 1934, 27: 52-56.
    Three cases.
70. Ueber Conjunctivitis catarrhalis acuta in Aegypten. *Klin. Mbl. Augenh.*, 1935, 94: 680-1.
    Annotations to an article of Dr. Chronis.
71. D'un mode particulier de traitement des formes rebelles du trachome (le raclage journalier) (with Habachi, S.) *Rev. trachome*, 1935, 12: 189-199.
    Extent of trachoma in Egypt; daily mechanical treatment recommended.
72. Remarks on trachoma healing without visible scar formation. *Bull. Ophth. Soc. Egypt*, 1937, 30: 145-150.
73. Radiological treatment of tumors of the sellar region. *Bull. Ophth. Soc. Egypt*, 1938, 31: 56-73.
    Four cases.

II. *Medical history and philology.*

74. Ueber die akuten eitrigen Bindehautentzündungen in Aegypten. *Klin. Mbl. Augenh.*, 1905, 43: 216-237. (Sonderabdruck; 23 p.)
    The causes of blindness in Egypt; with historical notes from Alpino, and Arabic manuscripts.

75. Notes sur l'histoire de l'ophtalmologie en Egypte. *Bull. Soc. opht. Égypte.* 1906/07, 43 f.

76. Ueber die ansteckenden Augenleiden Aegyptens; ihre Geschichte, Verbreitung und Bekämpfung; Vortrag gehalten zum Besten der deutschen Schule in Kairo am 24. März 1909. 36 p. illust. plates. 8°. Kairo, F. Diemer Nachfolg., 1909.

Includes description of ophthalmological objects from ancient Egypt, references to Ebers papyrus; praise of German science in development of ophthalmology; difficulties in ophthalmological practice in Egypt; general welfare of the blind.

77. Les manuscrits arabes sur l'ophtalmologie au moyen-âge existant à la Bibliothèque Khédiviale du Caire (Démonstration). *Bull. Soc. ophth. Égypte*, 1909, 33-36.

A list of 18 manuscripts found in the Khedivial Library.

78. Einige neuere Funde von Handschriften arabischer Augenärzte. *Zbl. prakt. Augenh.*, 1909, 33: 321-6.

Notice on 9 Arabic manuscripts.

79. Die Augenanatomie des Ḥunain b. Isḥâq; nach einem illustrierten arabischen Manuskript herausgegeben (with C. Prüfer). *Arch. Gesch. Med.*, 1910, 4: 163-190, pl.

German translation of the first maqâlat of the Book of Ten Treatises on the Eye.

80. Les plus anciens manuscrits des oculistes arabes. *Bull. Soc. opht. Égypte*, (1910) 1911, 7-12.

Notice on Arabic manuscripts.

81. Die aristotelische Lehre vom Licht bei Ḥunain b. Isḥâq (with C. Prüfer). *Der Islam*, 1911, 2: 117-128.

German translation of an Arabic text published by Cheikho in 1899.

82. Die Lehre vom Sehen bei Ḥunain b. Isḥâq (with C. Prüfer). *Arch. Gesch. Med.*, 1912, 6: 21-33.

On the spirit of vision; from the Book of Ten Treatises on the Eye.

83. Die angebliche Augenheilkunde des Ṯâbit ibn Qurra (with C. Prüfer). *Zbl. prakt. Augenh.*, 1911, 35: 4-8; 38-41. (Separatabdruck; 8 p.)

On the authorship of an apocryphal work commonly ascribed to this author; with biographical notes.

84. La peste en Egypte à la fin du XVIII[e] siècle et le médecin Enrico di Wolmar. *Rev. méd. Égypte*, 1913, 1: 132-7; 164-72.

This author was an eye witness of a plague epidemic in 1788-1790; he also described the Aleppo fever. Analysis of his work (publ., Berlin, 1827).

85. Le Docteur Clot-bey, l'ophtalmie et le collyre de Louxor. (Chronique) *Rev. méd. Égypte*, 1913, 1: 252-6.

Clot Bey's published work (Paris, 1859) contains the exact composition of the collyrium of Luxor.

86. Zur Geschichte der ägyptischen Augenheilmittels Schischm (Cassiae absus L. semina). *Arch. Gesch. Naturwiss.*, 1913, 6: 263-271.

A powder is made of the seeds of Cassia absus, and used in various eye diseases; known already to Másawaih, and the medieval Arabs.

87. Histoire du chichm, remède ophtalmique des Égyptiens. *Janus*, 1914, 19: 261-288.

The same as No. 86.

88. Ein Fall von Sublimatverätzung beider Augen in einer arabischen Chronik. *Mitt. Gesch. Med.*, 1913, 12: 553-555.

From the French translation of the chronicle of al-Gabartí (Merveilles biographiques); powdered sublimate was mistaken for eye powder, and it caused the death of Emir Ismail Effendi in 1773.

89. Notice historique sur l'emploi du nitrate d'argent dans les ophtalmies d'Égypte. *Rev. méd. Égypte*, 1914, 2. (Extrait, 5 p.) March.

Silver nitrate has been already used by Napoleon's army in 1799; properly introduced by Mackenzie in 1826; not much used in Egypt.

90. Ueber die Lidkrankheit Hydatis der Griechen, Schirnâq der Araber. *Arch. Gesch. Med.*, 1914, 8: 45-52.

90a. Soldatendirnen im alten und neuen Aegypten. *Mitt. Gesch. Med.*, 1915, 14: 323-9.

91. Die Augenheilkunde des Yuhanna ibn Masawaih (with C. Pruefer). *Der Islam*, 1915, 6: 207-256.

91a. Die Augenheilkunde in der von Budge herausgegebenen syrischen ärztlichen Handschrift. *Der Islam*, 1916, 6: 257-68.

92. Ibn al-Haitham und seine Optik. *Deut. optisch. Wschr.*, 1917, H. 1, 10-11.

93. Beitrag zum Volksheilglauben der heutigen Ägypter. *Der Islam*, 1917, 7: 307-344. Also Festschrift E. Hahn, 320-31.

Written from memory; on Egyptian tradition; various folk customs.

94. Aegypten. (Typescript; 46 l.) ca. 1915 (at Hannover) published as: Die augenärztlichen Verhältnisse in Ägypten während des 19. Jahrhunderts. In: *Handb. ges. Augenheilk.* (Axenfeld & Elschnig) Lpz., 1915, 2. Aufl., Bd. 14, Abt. 7, 393-404.

Geography of eye diseases in Egypt; with a long bibliography.

95. Der Hanf als Genussmittel der Orientalen. *Oesterr. Mschr. Orient*, 1917, 240-249, illust.

History, effect, names and use of hashish.

95a. Die erste Erwähnung der Syphilis in Aegypten 1498 n. Chr. *Mitt. Gesch. Med.* 1917, 16: 438.

96. Der Bazar der Drogen und Wohlgerüche in Kairo. *Arch. Wirtschaftsforsch. Orient*, 1918, 1-40; 185-218.

On history of Egyptian drug trade; description of drug bazaars in Cairo; trading methods; history of druggist, and his education; what he sells, and to whom.

96a. Brief eines erblindeten Altägypters. *Mitt. Gesch. Med.*, 1918, 17: 167.

97. Die Augenkrankheit eines ägyptischen Sultans 1513 n. Chr. *Arch. Gesch. Med.*, 1919, 11: 286-291.

German translation of a passage from a St. Petersburg manuscript; case of Qánsuh al-Gúrí, Mameluk sultan (1501-1516).

98. Die Optik der Araber; ein Sammelbericht. *Zschr. ophth. Optik*, 1920, 8: 16-29; 42-54; 86-90. (Transl. to Arabic in 1926 by Sobhy bey)

Review based upon the works of Eilhard Wiedemann, the physicist.

99. Ueber Klima und Gesundheit im alten Kairo nach 'Ali b. Ridwân. (11. Jahrh. n. Chr.) *Sitzber. Phys. med. Soz. Erlangen*, 1922/23, 54:-55: 197-214.
History of old Cairo, with notes on recent explorations.

100. Climate and health in Old Cairo, according to 'Ali Ibn Ridwan (XI century A. D.) *C. rend. Congr. internat. méd. trop.*, 1928, 2: 211-235, illust.
The same as No. 99.

101. Die Ausgrabungen von al-Fusṭâṭ. *Der Islam*, 1924, 14: 91-94.
A review of Ali Bey Bahgat's *Fouilles d'Al-Foustat* (Paris, 1921).

102. Ein Astrolab aus dem indischen Mogulreiche (with Josef Frank). 48 p. plates. 8°. Heidelberg, C. Winter, 1925. Forms No. 13 of Heidelberger Akten der von Portheim-Stiftung, also No. 3, of Arbeiten aus dem Inst. f. Gesch. d. Naturwiss.
Description of an astrolabe of the Kestner Museum at Hannover; made by Alláhdád, of Lahor, in 1609; translation of inscriptions, with identification of old cities.

103. La version Arabe d'un traité perdu de Galien. *Byzantion*, 1926, 3: 413-442.
On the Leiden fragment of an Arabic manuscript.

104. Les versions syriaques et arabes des écrits galéniques. *Byzantion*, 1926, 3: 33-51. Also in Greek transl., 'Ai Syriakai kai Arabikai metafraseis toon Galeenikoon syggrammatoon. Foos, Kairo, 1928, No. 29, 6 col. (fol.) by Dr. A. Diamantis.
Discussion of the importance of Bergsträsser's recent studies.

105. New Light on the early period of Arabic medical and ophthalmological science. *Bull. Ophth. Soc. Egypt*, 1926, 25-37, pl.
The same as No. 104.

106. New light on Ḥunain Ibn Isḥâq and his period. *Isis*, 1926, 7: 687-724.
The same as No. 104.

107. Eine 5000 Jahre alte wässerige Lösung. *Arch. Gesch. Math. Naturwiss.*, 1927, 10: 336-7.
On the discovery of the Harvard Expedition; saltpetre solution found in a royal tomb.

108. Neues zur Geschichte des Begriffes Pannus. *Arch. Gesch. Med.*, 1927, 19: 240-52.
Philological history of the word "sabal."

109. A short history of ophthalmology in Egypt during the xix century. *Bull. Ophth. Soc. Egypt*, 1927, 20: 33-52.
General outline since Napoleon's invasion of Egypt.

110. The book of the Ten Treatises on the eye ascribed to Ḥunain Ibn Isḥâq (809-877 A. D); the earliest existing systematic textbook of ophthalmology; the Arabic text edited from the only two known manuscripts, with an English translation and glossary. liii, 227 p., 222 p. (Arab text). 8°. Cairo, Government Press, 1928.
Hirschberg's investigations; early ophthalmological treatises; list of manuscripts; life, and work of the author; contents of the manuscript; available copies; translation, with Arabic text, and indices.

111. Eine unbekannte arabische Augenheilkunde des 11. Jahrhunderts n. Chr. *Arch. Gesch. Med.*, 1928, 20: 63-79.
On a work of Baḫtisú'.

112. Nachträge zur Geschichte des Begriffes Pannus. *Arch. Gesch. Med.*, 1928, 20: 390-396.
Few notes from different manuscripts.

113. Au sujet des hydatides palpébrales des anciens. *Ann. ocul.*, Par., 1928, 165: 247-251.
Short philological study.

114. Die Anfänge der arabischen Augenheilkunde. *Forschungen & Fortsch.*, 1928, 4: 324-5.
Notice on the Book of Ten Treatises on the Eye.

115. Die Anfänge der arabischen Ophthalmologie. *Communic. Congr. internat. hist. méd.*, Antwerp (1927) 1929, 6. Congr. (Extrait; 7 p.)
The same as No. 114.

116. Ueber das Leidener arabische Fragment von Galens Schrift "Ueber die medizinischen Namen." *Sitzber. Preuss. Akad. Wiss., philos. hist. Kl.*, 1928, 23: 296-319. (Sonderabdruck; 26 p.)
German abstract of the manuscript fragment.

117. Ueber echte und unechte Schriften Galens nach arabischen Quellen. *Sitzber. Preuss. Akad. Wiss., philos. hist. Kl.*, 1928, 23: 533-548. (Sonderabdruck; 18 p.)
Notice on various manuscripts; reference to Bergsträsser's recent studies.

118. Ueber echte Schriften Galens, welche die Araber noch besassen. *Internat. Beitr. Gesch. Med.* (Max Neuburger Festschrift) Wien, 1928, 257-60.
The same as No. 117.

119. Eine Augenbehandlung durch Galen, nach arabischer Quellen. *Klin. Mbl. Augenh.*, 1928, 80: 819-820.
From Usaibi'a.

119a. La version arabe d'un traité perdu de Galien. *Byzantion*, 1928, 3: 413-42.

120. An Arabic compendium of medicophilosophical definitions. *Isis*, 1928, 10: 340-349.
Critical analysis of Father Paul Sbath's publication (*Bull. Inst. Égypte*, 1926, 8: 21-43).

121. Zwei hygienisch-diätetische Abhandlungen des Maimonides. *Der Morgen*, 1928, 4: 620-4.

122. Autobiographische Bruchstücke Galens nach arabischen Quellen. *Arch. Gesch. Med.*, 1929, 22: 72-86.
From Usaibi'a.

123. Zur Geschichte der ärztlichen Fachausdrücke. *Forschungen & Fortsch.*, 1929, 5: 398-9.
Short note on Galen; see No. 133.

124. Ueber eine neugefundene antike Konvexlinse. *Klin. Mbl. Augenh.*, 1929, 83: 104. (Sonderabdruck; 1 p.)
A 10 dioptry convex lens from the time of the Ptolomeids, 3rd cent. B. C.

125. Notes sur quelques médecins juifs égyptiens qui se illustrés à l'époque arabe. *Isis*, 1929, 12: 113-131.

General outline based upon the work of Steinschneider.

126. L'oeuvre médicale de Maimonide. *Archeion*, 1929, 11: 136-155. Also *Sem. Êgypt.*, 1929, 3: No. 28/29; No. 30/31.

An occasional writing; with list of the works of Maimonides; from Wüstenfeld and Steinschneider.

126a. Die Anfänge der arabischen Ophthalmologie. *C. rend. Congr. internat. hist. méd.*, 1929, 6:(7 p.).

127. Von Alexandrien nach Bagdad; ein Beitrag zur Geschichte des philosophischen und medizinischen Unterrichts bei den Arabern. *Sitzber. Preuss. Akad. Wiss., phil.-hist. Kl.*, 1930, 23: 389-429. (Sonderabdruck; 43 p.)

Synthetical history based upon Arabic science histories; migration of the Alexandrian School to Antioch, Ḥarrán and Bagdad; early medical education of Arabs.

128. Das Schicksal der Schule von Alexandrien unter arabischer Herrschaft. *Forschungen & Fortsch.*, 1930, 6: 334-5.

Short note on No. 127.

129. Ueber einige Privatbibliotheken im fatimidischen Aegypten. *Riv. stud. orient.*, 1930, 12: 286-290. (Estratto; 5 p.)

Remarks on Olga Pinto's *Le biblioteche degli Arabi* (Firenze, 1928); notes from Usaibi'a.

130. The Book of Treasures, an early Arabic treatise on medicine. *Isis*, 1930, 14: 55-76.

Comments on G. Sobhy's critical edition of Ṯâbit ibn Qurra's work; with list of contents, and glossary of Arabic terms.

131. Die allgemeine Botanik und Pharmakologie des Edrisi. *Arch. Gesch. Math. Naturwiss.*, 1930, 12: 45-53; 225-236.

Drug history; with partial translation of manuscript text.

132. Ueber die Pharmakologie und Botanik des Aḥmad al-Ghâfiqí. *Arch. Gesch. Math. Naturwiss.*, 1930, 13: 65-74.

Translation of Introduction of Gáfiqí's work abridged by Barhebreus.

133. Galen über die medizinischen Namen; Arabisch und Deutsch herausgegeben (with Joseph Schacht). 43 p., 21 p. (Arab text). 4°. Berl., W. de Gruyter & Co., 1931. Forms No. 3, *Abh. Preuss. Akad. Wiss., Phil-Hist. Kl.*, 1931.

Arabic text with German translation; after the Leiden manuscript fragment.

134. Science and medicine. In: *Legacy of Islam* (Arnold, T.) Oxf., 1931, 311-355.

General outline.

135. Joannes Grammatikos (Philoponos) von Alexandrien und die arabische Medizin. *Mitt. Deut. Inst. ägypt. Altertumsk. Kairo*, 1931, 2: 1-21. (Sonderabdruck; 21 p., 3 pl.)

Medieval Arab sources prove that this Alexandrian scholar was known under two names.

136. Ueber den Papyrus Edwin Smith, das älteste Chirurgiebuch der Welt. *Deut. Zschr. Chir.*, 1931, 231: 645-90, illust.

Extensive note on James Henry Breasted's edition of the Edwin Smith papyrus (Oxford, 1930).

137. 'Ali aṭ-Ṭabarí's "Paradise of Wisdom," one of the oldest Arabic compendiums of medicine. *Isis*, 1931, 16: 1-54.

Critical notes on the edition prepared by Siddíqí (Berlin, 1928); with contents of work, and glossary of technical terms.

138. 'Ali ibn Rabban aṭ-Ṭabarí, ein persischer Arzt des 9. Jahrhunderts n. Chr. *Zschr. Deut. morgenl. Ges.*, 1931, 85: 38-68.

Bio-bibliography of this author; on basis of No. 137.

139. La tragédie d'un médecin juif à Bagdad au VIIème siècle. *Illustration juive*, Alexandria, 1931, 3: No. 9, 23-24.

The fate of the renegade Nathanael, known as Abu'l-Barakat, 11th cent.; mentioned by Usaibi'a.

140. Das Vorwort zur Drogenkunde des Bérúní; eingeleitet, übersetzt und erläutert von Max Meyerhof. 52 p., 19 p. (Arab text) 8°. Berl., 1932. Forms Heft 3, Bd. 3, of *Quellen & Stud. Gesch. Naturwiss. Med.*

Critical edition, with German translation; much criticized by Paul Kraus (1934), Max Krause (1935; 1938) and Krenkow (1932).

141. L'opération de la cataracte du chirurgien Antylle d'Alexandrie (2^{ième} siècle après J.-C.). *Livre d'or pour le jubilé du Prof. Papayoannou*, Cairo, 1932, 115-9.

From a manuscript of Rázi; correction of Hirschberg's statements.

142. A short history of ophthalmia during the Egyptian campaigns of 1798-1807. *Brit. J. Ophth.*, 1932, 16: 129-152.

Comparison of old reports with conditions in the present; role of British surgeons.

143. Al-Morchid fi'l-kohhl ou le guide d'oculistique: ouvrage inédit de l'oculiste arabe-espagnol Mohammad ibn Qassoûm ibn Aslam al-Ghâfiqí (XII siècle); traduction des parties ophtalmologiques d'après le manuscrit conservé à la bibliothèque de L'Escurial. 225 p. 4°. Barcelona, Lab. Nord Espagne, 1933. (Present of the laboratory for the 14. Internat. Ophth. Congr.)

French translation only; with comments.

144. Die Operation des Stars in der griechischen Medizin. *Die Antike*, 1933, 9: 72-80.

Knowledge of Celsus, and Antyllus; cf. No. 141.

145. La fin de l'École d'Alexandrie d'après quelques auteurs arabes. *Archeion*, 1933, 15: 1-15. Also *Bull. Inst. Égypte*, 1932-33, 15: 109-123. Also Typescript.

The same as No. 127.

146. Die Materia medica des Dioskurides bei den Arabern. *Quellen Gesch. Naturwiss.*, 1933, 3: H. 4, 72-84.

Drug history on basis of a manuscript in the Aya Sofiya Library.

147. Ibn An-Nafís und seine Theorie des Lungenkreislaufs. *Quellen Gesch. Naturwiss.*, 1933, 4: H. 1, 37-88, 15 p., 6 l. (with Arab text).

Critical analysis of aṭ-Ṭatáwí's dissertation (Freiburg, 1924); with Arabic text and comments on the passages related to the discovery of the lesser circulation.

148. La découverte de la circulation pulmonaire par Ibn an-Nafis, médecin arabe du Caire. (Typescript; 13 l.) 1934 *Bull. Inst. Egypte*, 1933/34, 16: 33-46.
The same as No. 147.

149. Ibn an-Nafis (XIIIth cent.) and his theory of the lesser circulation. *Isis*, 1935, 23: 100-120.
The same as No. 147.

150. Sur un ouvrage médical inconnu de Maimonide. 7 p. fol. Cairo, Inst. fr. arch. orient., 1934. Forms v. 3, Mélange Maspero, of *Mém. Inst. fr. arch. orient.*
Notice on the Śarḥ al-aqqár; cf. No. 173.

151. Sur un glossaire de matière médicale arabe composé par Maimonide. *Bull. Inst. Égypte*, 1934/35, 17: 223-235.
The same as No. 150.

152. Esquisse d'histoire de la pharmacologie et botanique chez les musulmans d'Espagne. *Al-Andalus*, 1935, 3: 1-41. Also in abstract: *Actes Congr. internat. hist. sc.* (1934), 1934, 3. Congr. (Extrait; 7 p.)
On Spanish drug names of Arabic origin.

153. Thirty-three clinical observations by Rhazes (circa 900 A. D.). *Isis*, 1935, 23: 321-56, 13 p. (Arab text).
Translations of case histories from the 7. book of al-Háwí of Rází; with Arabic text.

154. Sur le nom dardár (orme et frêne) chez les Arabes. *Bull. Inst. Égypte*, 1935/36, 18: 137-149.
Notes on an article of Ducros on the same topic; the word means Fraxinus excelsior or Ulmus campestris.

154a. Le temple du Vieux Caire et sa Geniza. *Archeion*, 1935, 17: 527-8.

154b. as-Śahir. *Isis*, 1935, 22: 224.

155. The history of trachoma treatment in antiquity and during the Arabic middle ages, *Bull. Ophth. Soc. Egypt*, 1936, 29: 26-87 (74-87 Arab text).
With a long list of ophthalmological manuscripts; retranslation of trachoma passages from the work of 'Alí ibn 'Isá, with Arabic text.

156. A sketch of Arabic science. *J. Egypt. M. Ass.*, 1936, 19: 462-74.
General summary.

157. Las operaciones de catarata de 'Ammár ibn 'Alí al-Mausilí. 117 p. 4 l. (Arab facs.) Barc., Lab. Norte de España, 1937.
Text in 4 languages, Spanish, English, French, German, each of ca. 30 p.

158. The medico-philosophical controversy between Ibn Butlan of Bagdad and Ibn Ridwan of Cairo; a contribution to the history of Greek learning among the Arabs (with Joseph Schacht). 124 p., 96 p. (Arab text) Cairo, 1937. Forms No. 13, *Pub. Fac. Arts Egypt. Univ.*
Critical edition of five treatises; with biographies of the authors.

159. Une controverse médico-philosophique au Caire en 441 de l'Hégire (1050 Ap. J.-C.), avec un aperçu sur les études Grecques dans l'islam. *Bull. Inst. Egypte*, 1936-37, 19: 31-43.
The same topic as No. 158.

160. On the text of our recent publication (with J. Schacht). *Bull. Fac. Arts Egypt. Univ.*, 1937, 4: 145-8.
Reply to criticism of No. 158.

161. Early mention of sleeping sickness in Arabic literature. *Proc. R. Soc. M., Lond.*, 1937, 30: 670-1. Also *J. Egypt. M. Ass.*, 1941, 24: 283-6.

Reference to sleeping sickness found by an Egyptian prince in the modern edition of al-Qalqašandí's medical encyclopedia; Mári Jáza, sultan of the Málli kingdom, died of sleeping sickness in 1374.

162. Jewish physicians in the Near East (in Hebrew). *Harefuah*, 1937, 13: 279; 332.

Biobibliographical sketches from available printed histories and biographies of Arab-Hebrew scientists; covers the period from 8th to 12th cent.

163. Mediaeval Jewish physicians in the Near East, from Arabic sources. (Lecture at the Hebrew Univ. Jerusalem, 1936). *Isis*, 1938, 28: 432-460.

The same as No. 162.

163a. Liste des ouvrages médicaux arabes à publier de préférence (Orient). In: *Science arabe* (Mieli, A.), Leide, 282-4.

164. Jewish physicians under the reign of the Fatimid caliphs in Egypt (969-1171 C. E.). *Med. Leaves*, 1939, 2: 131-9.

Shortened form of No. 162.

165. La gynécologie et l'obstétrique chez Avicenne (Ibn Sina) et leurs rapports avec celles des Grecs (with D. Joannides). 80 p. plates. 8°. Caire, R. Schindler, 1938. (From the Obstetr. Sect. of Hôpital Papayoannou.)

Outline of Greek gynecology and its transmission to the Arabs; with life of Ibn Sina, and contents of his gynecological knowledge; French translation of female anatomy only.

165a. La gynécologie de l'école alexandrine et sa survivance chez les Arabes (together with D. Joannidès). *Presse méd. Égypte*, 1939, 31: 9-12.

165b. La gynécologie et obstétrique de Paul d'Egine et son influence sur la médecine arabe (together with D. Joannidès). Cairo.

166. Le livre des questions sur l'oeil de Ḥonain ibn Isḥâq (with R. P. P. Sbath). 146 p. 4°. Cairo, Inst. fr. arch. orient., 1938. Forms v. 36, *Mém. Inst. Égypte.*

Critical edition of Arabic text, with French translation; a manuscript in possession of Pater Sbath is used as the main text; collation of text with five other versions

167. Essai sur les noms portugais de drogues dérivés de l'arabe. *Petrus Nonus*, 1938, 2: fasc. 1, 1-8.

Additions to A. C. Monteiro's *Da filologia sacra* (Lisboa, 1934); words collected from existing dictionaries (Portuguese, Latin, French, Arabic).

168. Sur les noms ibéro-portugais des drogues dans les manuscrits médicaux arabes. *Petrus Nonus*, 1939, 2: fasc. 2, 10 p.; 2 p.

Additions to No. 167 from four Arabic manuscripts on pharmacology.

169. Maimonides against Galen, on philosophy and cosmogony (with J. Schacht). *Bull. Fac. Arts Egypt. Univ.*, 1939, 5: 52-88.

On basis of the Aphorisms of Maimonides; translation of chapter 40 of discourse 25, according to the Arabic MS. No. 1937 in Gotha; with Arabic text.

170. Maimonides criticizes Galen. *Med. Leaves*, 1940, 3: 141-146.

Discussion of No. 169; without Arabic text.

171. Medizinisches aus Reisebeschreibungen nach Niederländische Indien im siebzehnten Jahrhundert (with H. C. Rogge). *Janus*, 1939, 43: 92-122.

Addition to D. Schoute's work (Amsterdam, 1929); extracts from printed reports of East India travelers from Johann Werk on to Langhans, i. e., 1623-1705; translation of Dutch texts.

172. The abridged version of the Book of Simple Drugs of Ahmad ibn Muhammad al-Ghâfiqî by Gregorius Abu'l-Farag (Barhebraeus); edited from the only two known manuscripts with an English translation, commentary and indexes (with G. P. Sobhy Bey). 588 p., 131 p. (Arab text). 8°. Cairo, 1932-1940. Forms No. 4, *Pub. Fac. Med. Egyptian* (Fouad) *Univ.* (Published in parts; fasc. 1, 1932; fasc. 2, 1937; fasc. 3, 1938; fasc. 4, 1940).

Critical edition with Arabic text; with many misprints; contains a list of pharmacological works from Greek times to 17th cent; publication discontinued.

173. Un glossaire de matière médicale de Maïmonide; édité et traduit par Max Meyerhof. lxxvi, 258 p.; 69 p. (Arab text) 4°. Le Caire, Inst. fr. archéol. orient., 1940. Forms No. 41, *Mém. Inst. Égypte.*

The last substantial work of Meyerhof; critical edition of Arabic text with translation, and glossaries; with role of Dioscorides among the Arabs, publication of books on drug synonyms, life of Maimonides.

174. Eye diseases in ancient Egypt. *Ciba Symposia*, 1940, 1: 305-310. (Repr., 6 p.)

Popular outline based on researches of Ebbell, Ebers, Grapow, et al.

175. Étude de pharmacologie arabe tirées de manuscrits inédits. *Bull. Inst. Égypte*, 1939/40, *22*: 133-152; 157-62; 1940/41, *23*: 13-29; 89-101, pl. (Pt. 1: Le livre de la droguerie d'Abu'r-Rayḥán al-Bérúní; Pt. *2*: Les premières mentions en arabe du thé et de son usage; Pt. 3: Deux manuscrits illustrés du Livre des simples d'Aḥmad al-Gáfiqí; Pt. 4: Le recueil de descriptions de drogues simples du Chérif al-Idrísí).

1. General analysis of Bírúní's work, with samples of text.—2. History of tea from manuscript and printed sources.—3. On the complete text of Gáfiqí's pharmacological work in the Osler and Cairo libraries.—4. Analysis of a manuscript.

176. The medical work of Maimonides. In: *Essays on Maimonides*, 1941, 265-299.

With life of Maimonides, his chief ten medical treatises, and samples from each work.

177. Quelques maladies d'Europe dans une encyclopédie médicale arabe du xviie siècle (with Monnerot-Dumaine). *Bull. Inst. Égypte*, 1941/42, *24*: 33-47.

Translations from Ibn Salám's medical encyclopedia.

177a. Arabische Heilmittellehre und Medizin (a series of seven articles issued as a complete number of *Ciba Zschr.*, 1942, 8: 2961-2994).

178. Aristarque de Samos, le Copernic de l'antiquité. *Bull. Inst. Égypte*, 1942/43, 25: 269-74.

Aristarchos, 3rd cent. astronomer and mathematician, was a precursor of Copernicus.

179. Sur un traité d'agriculture composé par un sultan yéménite du xive siècle, *Bull. Inst. Égypte*, 1942/43, 25: 55-63; 1943/44, *26*: 51-65.

With life of the sultan, al-'Abbás ibn 'Alí, his work on agriculture, and its general contents.

180. La surveillance des professions médicales et para-médicales chez les Arabes. *Bull. Inst. Égypte*, 1943/44, 26: 119-134.

On work of the muḥtasib, a delegate of the imám, who supervised the moral conduct of all professions; translation of chapters of a manuscript related to the druggists' business.

181. Arabic tooth-worm stories. *Bull. Hist. Med.*, 1945, 17: 203-4.

Translation from the German translation of Wiedemann (*Beitr. Gesch. Naturwiss.*, 1911).

182. Sultan Saladin's physician on the transmission of Greek medicine to the Arabs. *Bull. Hist. Med.*, 1945, 18: 169-78.

Probably the last publication of Meyerhof; translation of the 2nd chapter of a manuscript written by Ibn Jamí to Saladin; it is a sort of medical history, with explanation of the transmission of Greek medicine and its further growth under the Arabs, the fate of the Alexandrian School, the role of medical encyclopedists, including Oribasius, etc.

III. *Miscellaneous.*

183. Persisch türkische Mystik. 39 p. 12°. Hannover, H. Lafaire, 1921.

German translation of 11 Persian and Turkish poems written by 13th and 15th cent. mystics: Jalál ad-Din Rúmí, Muslih ad-Din Ṣa'dí, Farid ad-Din 'Akár, and Yúnus Emre.

184. Le monde islamique. (Bibliothèque générale illustrée) 80 p. 59 plates. 8°. Paris, F. Rieder & Cie, 1926.

Written for Westerners who still look upon the colored Arabs as their inferiors; the Islam is not only a religion but also a civilization; explains its origin, character and present extension.

185. Brief aus Kairo. *Zbl. prakt. Augenh.*, 1909, 33: 287; 382-383; 1910, 34: 382; 1911, 35: 252-3.

186. Brief aus Kairo. *Med. Klin.*, Berl., 1910, 6: 125-6; 204-5; 651-2; 1913. (Sonderabdruck; 3 p.)

On political and medico-economical difficulties in Egypt.

187. Brief aus Kairo. *Med. Klin.*, 1914, No. 10 (Sonderabdruck; 4 p.); No. 34 (Sonderabdruck; 4 p.) Mitte Juli.

On epidemic diseases in Egypt, and political situation in the country.

188. La guerre turco-balkanique. (Signed: M.) (Actualités) *Rev. méd. Égypte*, 1913, 1: 63-65; 93-4.

Notes on the letters of Wieting Pasha, and Dr. Depage, both engaged as military surgeons in the Balkan War.

189. XVII[e] Congrès international de médecine. *Rev. Méd. Égypte*, 1913, 1: 219-21.

190. Comptes rendus; XVII[e] Congrès international de médecine. *Rev. méd. Égypte*, 1913, 1: 221-230.

191. Le cocainisme et le débit des drogues prohibiées en Egypte. (Actualités) *Rev. méd. Egypte*, 1913, 1: 270-3.

Cocainism was introduced into Egypt from Paris; it spreads by means of the drugstores; the Egyptian harems imported the habit from Istanbul.

192. Bei den Geistern des Morgenlandes. *Deut. Kurier*, 1917, Febr. 2-6. (4 half-columns.)

Superstition of donkey-drivers and mothers.

193. Von den Heiligen des Morgenlandes. (Feuilleton) *Neue gesellsch. Correspondens*, 1917, 14: No. 15.

On the Egyptian saint (wálí), the idiot (magzúb), the teacher of religion (fiki), and the graves of holy men.

194. Orientalische Gastlichkeit. *Oberlausitz. Dorfstg.*, 1917, 20. Apr. (3 columns.)

Meyerhof's experiences with hosts and dinners.

195. Die Wohlgerüche Arabiens. (Feuilleton) *Neue gesellsch. Correspondens*, 1919, 16: (2 col.) No. 59.

A scene in an Egyptian bazaar; selling of perfume, oil of the flowers of Acacia farnesiana.

196. Im Drogenbazar zu Kairo. (Feuilleton) *Neue gesellsch. Correspondens*, 1919, 16: No. 67, (2 col.).

Description of a bazaar scene, the druggist and his customers.

197. Mein Freund Mithridates; eine fast wahre Geschichte. (Feuilleton) *Neue gesellsch. Correspondens*, 1921, 18: No. 48 (1 col.).

A delightful little story written under the pseudonym "Hofmayer"; describes his adventures with a one-eared old rat whose periodic excursions into the kitchen cause the departure of his wife, and of Ella, the maid; the rat stands any poison, hence it deserves the name Mithridates.

198. Derwisch-Nacht in Kairo. *Zweites Morgenbl. d. Frankfurter Ztg.*, 1923, Nov. 9, No. 833, p. 2. (4 half columns.)

Description of a dance of the Rifai dervishes.

199. Eine islamische Kunstausstellung in Alexandrien. *Der Islam*, 1927, 16: 151-2.

Musings on a catalog of artistic objects exhibited by Les amis de l'art in Alexandria.

200. Der Kranke in der Wüste. *Berl. Tageblatt*, 1928, No. 477, Oct. 9 (one & ½ col.).

On the climatic advantages of Egypt, and indications of climatotherapy.

201. Report of the International ophthalmological conference at Scheveningen (Holland) (with M. Riad; as delegate to conference). *Bull. Ophth. Soc. Egypt*, 1928, 25: xxix-xxxii.

202. Tropenhygieniker in Kairo. *Beibl. Berl. Tagebl.*, 1929, 8. Jan., No. 12.

203. Internationaler Kongress für Tropenmedizin und -hygiene Kairo, 15.-22. Dezember 1928 (Bericht) *Med. Welt*, 1929, 3: 171-2. (Sonderabdruck; 7 p.) Also *Klin. Mbl. Augenh.*, 1929, 82: 106.

203a. Aussichten für deutsche Aerzte in Egypten. *Deut. med. Wschr.*, 1929, 55: 537.

204. Der Orientale ehrt seine Lehrer. *Nachr. Bl. Ver. ehemal. Schüler Goethe-Gymn. Hannover*, 1930, No. 6, 3-5.

205. Rotary ideals among the ancient Greek and Arab doctors. *Rotary Bull.*, Cairo, 1933, 2: 11.

On the Hippokratic oath, and its Arab interpretation by Muḥammad al-Gáfiqí.

206. Muṣṭafá Kámil Pasha. *Enzykl. Islam*, 1933, 4: 763-64; 824-25.
207. Al-'Aśśáb; al-'Aṭṭár; Bandj; Constantinus Africanus; al-Djarráḥ. *Enzykl. Islam*, 1934, Suppl., fasc. 1, 5.
207a. Ḥashísh; Ibn al-Nafís; Ibn al-Tilmídh. *Enzykl. Islam*, 1936. Suppl., fasc. 2.

IV. *Book Reviews.*

207b. Zeky, A. Ṣafadí: Nukat al humyán (1911). *Zbl. prakt. Augenh.*, 1912, 35: 318-9. Also *Mitt. Gesch. Med.*, 1911/12.
208. G. Schweinfurth. Les noms arabes des plantes de l'Egypte, de l'Algérie et du Yeman (Arabische Pflanzennamen. Berl., 1912. 232 p.) *Rev. méd. Égypte*, 1913, 1: 261.
208a. Hirschberg, J. Die Optik der alten Griechen (1915). *Deut. opt. Wschr.*, 1915/16, 430-31.
208b. Noeldeke-Festgabe. *Mitt. Gesch. Med.*, 1916, 15: 253-55.
208c. Hess, J. J. Beduinisches zum alten und neuen Testament (1915) *Mitt. Gesch. Med.*, 1916, 15: 334.
208d. Musy, T. Kannten die Babylonier den grauen Star? (1914) *Mitt. Gesch. Med.*, 1916, 15: 436.
208e. Wreszinski, W. Atlas zur altaegyptischen Kulturgeschichte (1915-16). *Mitt. Gesch. Med.*, 1916, 15: 436-7.
208f. Hell, J. Die Religion des Islam (1915) *Mitt. Gesch. Med.*, 1916, 15: 443.
208g. Greeff, R. Kritische Betrachtungen über Funde von Brillengläsern und Lupen (1916) *Mitt. Gesch. Med.*, 1917, 16: 84-5.
208h. Pichler. Die Ophthalmia militaris in der k. u. k. Armee (1918) *Mitt. Gesch. Med.*, 1918, 17: 152.
209. Hilton-Simpson, M. W. Arab medicine and surgery. Lond., 1922. *Mitt. Gesch. Med.*, 1923, 22: 196-197.
210. Schilling, V. Kriegshygienische Erfahrungen in der Türkei (Cilicien, Nordsyrien). Leipzig, 1921. *Orientalist. Liter. Ztg.*, 1925, 28: cols. 67-68.
211. Smith, G. E., & Dawson, W. R. Egyptian mummies. Lond., 1924. *Orientalist. Liter. Ztg.*, 1925, 28: cols. 302-306.
212. Bonjean F. J., & Deif, Ahmed. Mansour, histoire d'un enfant du pays d'Égypte. Paris, 1924. *Orientalist. Liter. Ztg.*, 1925, 28 col. 527. (ca. 20 lines.)
213. Lens, A. R. Pratiques des harems Marocains: sorcellerie, médecine, beauté. Par., 1925. *Der Islam*, 1926, 15: 158. (Sonderabdruck; 1 p.)
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213a. Ḥasan Kamál, aṭ-ṭibb al-miṣrí al-qadím (1922) *Isis*, 1926, 8: 198-200.
213b. Sbath, P. 1500 manuscrits scientifiques et littéraires, en arabe et en syriaque (1928). *Mitt. Gesch. Med.*, 1926, 25: 311-2.
214. Rif'at Pasha, I. View of the Two Sanctuaries. 2 vol. Miṣr, 1925. *Isis*, 1927, 9: 130-133.
214a. Pinczower, E. Ueber den Kanon des Ibn Sina (1927). *Mitt. Gesch. Med.*, 1927, 26: 325-6.
215. Devonshire, R. L. L'Egypte musulmane et les fondateurs de ses monuments. Paris, 1926. *Orientalist. Liter. Ztg.*, 1927, 30: col. 973 (half a column).

216. Kühnel, E. Islamische Stoffe aus ägyptischen Gräbern. Berl., 1927. *Orientalist. Liter. Ztg.*, 1928, 31: cols. 401-404.
217. Blackman, W. S. The Fellāḥin of Upper Egypt. Lond., 1927. *Orientalist. Liter. Ztg.*, 1928, 31: cols. 602-4.
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224. Kohn, H. Nationalismus und Imperialismus im vorderen Indien. Frankf., 1931. *Zschr. Deut. morgenl. Ges.*, 1931, 10: 382-3.
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226. Neugebauer, R. & Troll, S. Handbuch der orientalischen Teppichkunde. 14. Aufl. Leipzig., 1930. *Orientalist. Liter. Ztg.*, 1932, 35: cols. 126-7.
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241. Brunet, F. Oeuvres médicales d'Alexandre de Tralles. Par., 1933-1937. *Orientalist. Liter. Ztg.*, 1935, 38: cols. 135-7; 1937, 40: cols. 497-8; 1938, 41: cols. 212-3; 1939, 42: cols. 422-3.
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Professor of surgery at Egyptian University; studied in Munich; 1875-1928.
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1876-1940.

THE BROWNE PRIZE MEDALS

SARAH ELIZABETH FREEMAN

Artis O praeses medicae, vel audis
Laetior Musae citharaeque fautor;
Spiritum Phoebus tibi, Phoebus artes
Mille medendi
Tradidit . . .

[Edward Cooke, *In memoriam Gulielmi Browne . . .*]

Died, May 10, 1774, at his residence in Queen Square, Sir William Browne, Knt. M. D., aged 82.[1] But in his own words, aged 12; for "he told the Archbishop, at a public table, a little before his death, in the most abrupt manner, 'that he was twelve years old.' Upon being stared at, and asked to explain himself, he added that 'the term of man's life fixed in Scripture being but threescore and ten, he had begun again, and was got into his twelfth year.'"[2]

The son of a physician, Sir William, who was knighted in 1748 by George II, was born in 1692, in the county of Durham. He became a student at Peterhouse, in the University of Cambridge, at the age of fifteen, having already determined upon his career. "I had considered long before at school, and on my admission in 1707, that the universal profession of Religion must much more concern me through life, to provide for my happiness hereafter; than the particular profession of Physic, which I proposed to pursue, to provide for my more convenient existence here . . ."[3] He received the degree of Bachelor of Arts in 1710 and an M. A. in 1714. In 1721, after a preliminary practice of medicine at Lynn, in Norfolk, where he later continued to follow his profession for more than thirty years, he was awarded a doctorate. Sir William, however, had no intention of spending his entire life in the country. He almost immediately applied for membership in the College of Physicians, being admitted a Fellow in 1726; he was also a Fellow of the Royal Society.

[1] Cf. *The Annual Register, or a View of the History, Politics, and Literature, for the Year 1774* (second edition, London, 1778), p. 191; also, *Gentleman's Magazine*, XLIV, 1774, p. 142.

[2] John Nichols, *Literary Anecdotes of the Eighteenth Century; Comprising Biographical Memoirs of William Bowyer*, etc., Vol. VIII (1814), pp. 439-40.

[3] From "A New Year's Gift: A Problem and Demonstration on the XXXIX Articles, 1772," as quoted by Nichols, *ibid.*, III (1812), p. 328.

In 1749, Sir William moved to London. "The manly age and inclination, with conformable studies, I diligently applied to the practice of physic in the country: where, as that age adviseth, I sought riches and friendships. But afterward, being satiated with friends, whom truth, not flattery, had procured, satiated with riches, which Galen, not Fortune, had presented, I resorted immediately to this College [of Physicians]: where, in farther obedience to the same adviser, I might totally addict myself to the service of honour."[4] Elected to several different offices in the College, Sir William served, finally, as president in 1765 and 1766, retiring after two years, though the term was generally five. His farewell address continues:

. . . your Praesident

> Acknowledges, that he has happy been,
> And, now, content with acting this sweet scene,
> Chuses to make his exit, like a guest
> Retiring pampered from a plenteous feast:

in order to attach himself and the remainder of his life, no longer, as before, solely to the College, but, by turns, also to the medicinal springs of his own country: although, as a Physician, never unmindful of his duty, yet after his own manner, with hilarity rather than gravity: to enjoy liberty more valuable than silver and gold, as in his own right, because that of mankind, not without pride, which ever ought to be its inseparable companion.

> Now the free foot shall dance its favorite round.

Behold an instance of human ambition! not to be satiated, but by the conquest of three, as it were medical worlds; lucre in the country, honour in the College, pleasure at medicinal springs! I would, if it were possible, be delightful and useful to all: to myself even totally, and aequal: to old age, though old, diametrically opposite, not a censor and chastiser, but a commender and encourager, of youth. I would have mine such as, in the Satire,

> Crispus's hoary entertaining age,
> Whose wit and manners mild alike engage.[5]

Sir William obviously "cultivated his attachment for Apollo," as the patron of Poetry as well as Physic. "A great number of lively essays, both in prose and verse, the production of his pen, were printed and circulated among his friends."[6]

[4] From the final address delivered by Sir William before the College of Physicians upon his retirement from the office of president. Cf. Nichols, *op. cit.*, III, p. 316; also William Munk, *The Roll of the Royal College of Physicians*, Vol. II (London, 1878), pp. 99 ff.

[5] *Loc. cit.*

[6] Nichols, *op. cit.*, III, p. 316.

Though few, if any of Sir William's varied literary works could now be cited by any but the most ardent bibliophile, his Last Will and Testament—"the curious will of a somewhat remarkable man"[7]—brought him, with the prompt execution of certain of its items, everlasting fame.[8] Lest we do the worthy knight an injustice, we must hasten to add that the leaving of recognizable footprints in the sands of time was probably not his primary motive, except in so far as vanity played a part in his desire to assure by fair means or foul the application or continuation of some of the pet projects for which he had crusaded so zealously. He was also a most devoted alumnus of Peterhouse and the University of Cambridge. Though most of his estate went to his grandson, nephew and namesake of Martin Folkes, the University of Cambridge would have been the chief legatee, if Folkes had died without issue.

As it was, he left a fund for the establishment of a Scholarship in Classics, and, in his own words:

[7] In the words of E. G. Clayton. Cf. "The Will of Sir William Browne, M. D.," *British Medical Journal*, 1904, ii, pp. 1771-73. Clayton gives a complete transcript of the will with original punctuation and spelling. For much of it, see also Nichols, *op. cit.*, VIII, pp. 440 ff., and for those sections which concern the Cambridge Prize Medal, cf. Adam Wall, *An Account of the Different Ceremonies observed in the Senate House of the University of Cambridge. . . .* (Cambridge, 1798), pp. 256-7.

[8] It must also have brought him considerable sorrow, if he were in a position to know, for he stipulates that "Having erected my own and Ladys Monuments in Hillington Chancel I appoint a Marble Monument to be Erected for me in Westminster Abbey, (where I designed to have been interred if I had died first,) [Dame Mary died in 1763] according to my Draught, Inscription and Directions left for this purpose. I desire it may be placed as near that of my Master Doctor Mead, MEDICORVM FACILE PRINCIPIS, as any Vacant Arch may admit, otherwise in the Poets Corner over against that of Mr. Prior." Further specifications are given in the Codicil: "I will that my Executor shall cause a Marble Monument to be erected for me in Westminster Abbey, according to the Draught No. III. left by me for that purpose, with the inscriptions I have directed for it. The Arch on the West Side of the East Door leading into the Cloisters, whereon is a small Oval Bust, which, it seems, may be put up on the Vacancy over the Arch, is the place I appoint for it. I desire my Executor to shew the Draught first to Mr. Wilton in Portland Street, and then to Mr. Moore in Berners-Street; and whose proposals he most approves, to prefer him to execute it." Sir William seems to have failed, however, to make even the Arch leading into the Cloisters, for a letter received from Mr. Hebron of the Chapter Office informs us that a thorough search of the records has failed to reveal "any mention or even suggestion of a monument ever being erected to Sir William Browne in Westminster Abbey."

For Joseph Wilton (1772-1803), who specialized in decorative sculpture, and "was much sought after for busts and monuments," see *The Dictionary of National Biography*, LXII, 152-3. According to Nichols, *op. cit.*, IX (1815), p. 704, "There is a good representation of Sir William's profile, taken . . . from one executed by Wilton," on the monument in Hillington Church. Presumably Wilton was the sculptor of the "Marble Medallian Bust," which was to serve as the model for the portrait on the obverse of the medal.

I direct my Executors to procure a Die to be Engraved, proper to Strike Medals of Gold of Five Guineas Value; the obverse to be an Imitation of my Marble Medallian Bust, the Motto, ESSE ET VIDERI. On the Exergue, in two lines GVLIELMVS BROWNE, EQVES / NAT. III. NON. JAN. A. I. MDCXCII. On the Reverse, Apollo, radiated seated on An Advanced Throne, resting his Lyre on his left Knee with his left hand, and extending his Right hand with a Laurel-Wreath over the head of a Scholar, with a Gown and band, kneeling on the Steps, and presenting a Scroll, in his Right hand, and holding down his Square Cap with his left hand, the motto SVNT SVA PRAEMIA LAVDI; on the exergue in two lines, ELECTVS COLL. MED. LOND. PRAESES. / A. S. MDCCLXXVI.[9] With this shall be struck Two Gold Medals of Five Guineas Value, and sent to the Vice Chancellor of Cambridge annually, in the beginning of January, to be given by Him, at the following Commencement, to Two Under-Graduates: one of whom shall Deliver to Him, in June before, the best Greek Ode in imitation of Sappho; the other the best Latin Ode in imitation of Horace, on a Subject to be appointed by Him in January before. Which Odes shall be fairly written, dated, and subscribed by the Authors, in a Book to be laid on the Register's Table for publick Inspection, at the Commencement. And I charge my estates for the perpetual Performance of this annual bequest.

In the Codicil, added on July 1, 1773, he further stipulates:

By recommendation of Dr. Cooke, Vice-Chancellor of the University of Cambridge, I will that a Third Gold Medal of like kind with those two in my Will mentioned, shall be sent by my executor annually, with those Two, to the Vice-Chancellor of that University for the time being, to be given by Him to the Undergraduate who shall produce the best Greek epigramm, after the Model of Anthologia, and the best Latin epigramm, after the Model of Martial, on a Subject of his appointing, to be given all Three on the Commencement Day. I charge my Estates also with this third Medal forever.

There was no delay in the execution of the bequest. We read in an "Historical Chronicle," for January 19, 1775: that "Sir William Browne having directed his executors to procure a die for annually striking off two medals of gold . . . the Deputy Vicechancellor has appointed for the subject of the odes for the present year, 'In memoriam Gulielmi Brown, Equetes, M. D.,' and for the Epigramms, 'De praemiorum ad doctrinam promovendam utilitate.'"[10] In the following year, 1776, the subject announced for the odes was, appropriately, "Bellum Americanum."[11] We also learn that "The Epigramm Prize Medal was not disposed of last year; two therefore will be given this year, if any Epigramms appear to

[9] Clayton, *loc. cit.*, p. 1771, remarks that "an error occurs in the will. Sir William Browne was President of the College of Physicians in 1765-6 and died in 1774; but in his directions concerning the inscriptions on the Gold Medals, by a *lapsus calami* he gives the date MDCCLXXVI, which of course should be MDCCLXVI."

[10] *Gentleman's Magazine*, XLV, 1775, p. 44.

[11] *Ibid.*, XLVI, 1776, p. 138.

deserve them." The three medals were awarded annually with remarkably few lapses, as an examination of the frequently published lists of winners shows,[12] until the year 1858. At this time, "A new Statute for the Medals, approved by the Queen in Council, 6 April 1858, authorized the division of the prize into two Medals of half the original value, should the best Greek and the best Latin Epigram be not written by the same person, and in 1866 the Earl of Powis, soon after he became High Steward, conveyed £200 to the University in order that each Medal might be of the uniform value of five guineas." [13] Consequently, since 1858, there have been normally four medals each year.

A selection of the prize-winning odes and epigrams was published in 1810, under the title, *Musæ Cantabrigienses; seu Carmina quædam Numismate aureo Cantabrigiæ ornata, et Procancellarii permissu edita.* We quote from a contemporary review: [14]

> Poetry is certainly not altogether uncongenial with science; and it appears rational to expect, that in an university, devoted to the cultivation of every branch of literature, it should meet with a due share of encouragement. Till the middle of the eighteenth century, however, the University of Cambridge never ventured upon the patronage of any thing but the mathematics. About that time, classical learning was promoted to some degree of consideration by the institution of the Chancellor's medals; and a Mr. Seaton left a small estate for the encouragement of sacred poetry. Even this, however, was confined to the Masters of Arts; to those whose mathematical days were past, and in whom therefore poetry, or at least an annual attempt at it, could not be accounted a very heinous sin. The gradual advancement of the classics introduced a better taste and a speculation less confined: it is now about half a century since Sir William Browne directed an annual distribution of three gold medals for the encouragement of poetry in the undergraduates of the University. Of these the first is given for a Greek ode in imitation of Sappho, the second for a Latin Alcaic ode, and the third for a pair of epigrams, the one Greek and the other Latin, on the model of Martial, and, we believe, the Greek Anthology.
>
> To include such discordant styles as the point of one, and the ἀφέλεια of the other, under one prize, seems to intimate an expectation of qualities which are rarely found to reside in the same persons: leaving this, however, we cannot but regret that a composition in English verse was not substituted in the place of the two epigrams; since the young student is now left without any honorary inducement to cultivate poetry in his own language; the encouragement held out by the Seatonian prize being, as we have already observed, confined to the Masters of Art. Instead, however, of upbraiding the donor for what he has left undone, let us give

[12] For example, in *The Historical Record of the University of Cambridge*, edited by J. R. Tanner.

[13] *The Historical Record* . . . (Cambridge, 1917), p. 302. Cf. also, *Statutes of the University of Cambridge* (Cambridge, 1882), pp. 122-3.

[14] *Quarterly Review*, IV, 1810, pp. 382-392. For another review of the preface, see *The Classical Journal*, IV, 1811, pp. 78-87.

him the credit for what he has done. The design was certainly laudable, and the success of it has not been contemptible. These annual offerings, seasoned as they occasionally are with poetical beauties, are at least sufficient to keep alive the memory of the man, at whose shrine they are presented; and when it is considered at how cheap a rate this species of immortality may be purchased, we cannot but be astonished, that prizes for competitions of this nature, are not more numerous in both our Universities.

The present study of the Browne Prize Medals stems from a comparison of a specimen in the Henry Barton Jacobs Collection with Storer's published description.[15] Though otherwise similar in almost every detail, including size (35 mm.), Storer's description called for a signature: L·C·W· [Leonard Charles Wyon]. Careful examination from every conceivable angle failed to reveal even a trace of such initials on the Jacobs piece (Fig. 1, *above*). The medal was not included in Storer's personal collection, and consequently the mystery was heightened by the discovery that no mention was made of any signature in Grueber's description, which Storer cited and otherwise accurately transcribed.[16] Nor does Storer, himself, make any mention of a signature in his earlier publication of the medal.[17] That there were some grounds, however, for the discrepancy, which must have been due either to a mix-up in his notes, or to the genuine belief that the signature had merely been overlooked and omitted by earlier writers, was revealed by a perusal of the list of Leonard Charles Wyon's medallic works in Forrer's *Biographical Dictionary of Medallists*,[18] where is included: "Sir William Browne, 1692-1774, President of the College of Physicians and of the Royal Society; Prize Medal for Greek and Latin odes and epigrams at Cambridge." In view of this rather startling corroboration, the problem demanded solution, for it occurred to the author, as it does not seem ever to have occurred to anyone else—or were they not so curious?—that Leonard Charles Wyon, who was born in 1826 and whose earliest known

[15] Cf. Horatio Robinson Storer, *Medicina in Nummis* (Boston, 1931), no. 500. The Jacobs Collection is now in the Institute of the History of Medicine at the Johns Hopkins University. It might be well to note here that the specimens in the Jacobs Collection, as well as those in the Army Medical Museum in Washington, D. C., and one in the British Museum, are of bronze. There is also a specimen in silver (cf. Rüppell, *Numismatische Zeitschrift*, VI-VII, 1874-5, p. 229, no. DXCII[a]). These replicas of the gold award medals were presumably struck either as test pieces or for sale to collectors.

[16] Herbert A. Grueber, "English Personal Medals from 1760," *Numismatic Chronicle*, series 3, VII-VIII, 1887-1888, *passim*. For the Browne medal, cf. VIII, 1888, p. 251, Pl. XI, 3.

[17] In *The American Journal of Numismatics*, XXVII, 1893, p. 84.

[18] Vol. VI, pp. 625-631; especially p. 628.

work dates from about 1843, could not possibly have engraved a medal which was presented in 1775. At least, it seemed highly unlikely.

Concrete evidence for the existence of a Browne medal signed by L. C. Wyon was speedily forthcoming. A brief search produced a published description,[19] and an actual example was seen in the collection of the

Fig. 1. *Above,* Bronze replica of the Browne Prize Medal in the Henry Barton Jacobs Collection, struck from a die engraved by William Wyon.

Below, Bronze replica of the devaluated Browne Prize Medal, awarded to the winners of the competitions in Greek and Latin Epigrams from 1858 to 1866, struck from a die engraved by Leonard Charles Wyon. Courtesy of the Army Medical museum, Washington, D. C. (Neg. No. 74500).

Army Medical Museum in Washington, D. C. (Fig. 1, *below*).[20] This signed type actually differs considerably from the unsigned. It is 26 mm. in diameter, and might be described as:

[19] William John Hocking, *Catalogue of the Coins, Tokens, Medals, Dies and Seals in the Museum of the Royal Mint,* II (London, 1910), p. 260, no. 126. The die is also in the Mint collection.

[20] No. 2900. We are indebted to Major Harry A. Davis, Curator of the Army Medical Museum, for an opportunity to examine the piece, and for the photographs (U. S. Army Medical Museum neg. no. 74500).

Obv: Bust in profile to left. On truncation of arm, L·C·WYON· In a semicircle, above, D. GVLIELMVS BROWNE EQVES. and below, ESSE ET VIDERI.

Rev: Apollo seated to left on a raised platform, his left arm resting upon his lyre; with his right, he holds out a wreath over the head of a student, who kneels before him, holding up a scroll in his right hand, and his cap in his left. On bottom step of platform, at right, L·C·W· *Legend*: ELECTVS COLL· MED·LOND· PRAESES A·S· 1765 and in the exergue, SVNT SVA PRAEMIA / LAVDI

Most of the differences are quite obvious, but, especially since our illustration of the smaller type leaves much to be desired, it might be wise to summarize them briefly. On the obverse, the date of birth has been omitted and the positions of the name and the motto have been reversed. The bust is of the same general type, but differs in details, in the rendering of the hair, in the shape of the nose, and in the ornament on the sleeve. In short, it is a poor copy of the larger bust. On the reverse, the scene, at first glance, appears to be the same, but the resemblance is not so marked upon closer examination. Apollo is seated more in profile, with his elbow instead of his hand resting on the lyre; his knees are bent more sharply, with the right leg scarcely visible. The rendering of both anatomy and drapery on the smaller medal does not compare with the larger. The pose of the student, the angle of the scroll, and the relative position of the wreath to his head should also be noted. With regard to the legends, the motto has been placed in the exergue, and the inscription in the larger exergue, with the date in Arabic rather than in Roman numerals, is used as the legend. Most of these changes may be considered space-saving devices necessitated by the smaller flan. Is there any possible explanation for this reduction in size?

As we have already noted, Queen Victoria, on April 6, 1858, "authorised the division of the prize [for Epigrams] into two medals of half the original value," should they not prove to have been written by the same person, and a glance at the list of winners shows that since that year the prize for the best Greek and that for the best Latin Epigram have usually been awarded to different candidates. Furthermore, in 1866, an additional sum of money was presented to the University "in order that each Medal might be of the uniform value of five guineas." Obviously, the smaller medal was necessitated by the authorized reduction in value. Though it would appear that the larger medal could have been reduced in size without much loss in quality, in fact without as much as is found in the copy, some technical difficulty presumably prevented this method of producing medals of half value, and an entirely new die was engraved.

This must have been done between April and June 1858, when two Epigram prizes were first awarded. The die was then discarded in 1866, when the four prizes were once again made uniform in value. It seems reasonably safe to conclude, therefore, that the 26 mm. type of Browne Prize Medal, with the signature of Leonard Charles Wyon, was in use for only eight years, and then only for the winners of the competition in Greek and Latin Epigrams. Thus our original problem may be considered solved. There remains, however, the possible attribution of the larger type.

There is no doubt that the die for the first Browne Medal must have been engraved between May 1774 and January 1775, or shortly thereafter. In 1774, John Sigismund Tanner was concluding a long career as chief engraver at the Mint, but, due to his poor health, most of the actual work devolved upon his assistants, Richard Yeo and Thomas Pingo. The former succeeded Tanner, upon his death in March 1775, and was in turn succeeded by Lewis Pingo, son of Thomas, who had died in 1776. Lewis Pingo was followed in the post by Thomas Wyon, Jr. (in 1815), by Benedetto Pistrucci and William Wyon (in 1817), and finally by Leonard Charles Wyon (in 1851). Turning to Forrer's invaluable *Dictionary*, we find nothing to interest us under Tanner, as might have been expected, or under Yeo. But in a discussion of pieces acquired " from the succession of Lewis Pingo," which are presumed to be the work of Thomas Pingo,[21] we are rewarded by Number 5, which is described as a " Model in wax: Apollo seated to left, his l. arm resting on lyre, and holding in extended r. hand a wreath with which he crowns a student kneeling at his feet; on circular sheet of glass painted black on other side; 42 mill." Forrer's comment that " This is apparently an alternative design for the reverse of the Dr. Sir William Browne medical medal, 1765 (Election for Presidency of the Royal College of Physicians) " can not be taken very seriously, even if there were a medal struck on the occasion of his election, in view of the analogies between the wax model and the specific instructions for the scene to be depicted on the reverse of his proposed prize medal, written in his own hand by Sir William on February 11, 1772.[22]

[21] Vol. IV, 558-9. At the beginning of this list Forrer remarks: " A number of other pieces, from the succession of Lewis Pingo, may be by Thomas Pingo, under whose name I describe them, although they are unsigned." There is, consequently, the possibility that the wax model may be the work of Lewis Pingo, rather than his father. Lacking any other evidence, we will accept Forrer's attribution.

[22] The date of the will. Sir William requested that the bust on the obverse should be " an imitation of my Marble Medallian Bust." Certainly there would have been no reason to give explicit directions for the remainder of the design, if it had already

Unfortunately we have been unable to locate the present whereabouts of this wax model, and consequently to obtain a photograph, so that it is impossible to conclude how closely the design corresponds to Sir William's specifications or to the known medal. There seems little reason to doubt, however, that the first Browne Medal was the work of Thomas Pingo. But Forrer's *Dictionary* was embarrassingly rich in Browne Medals. In his list of William Wyon's medallic works, under the heading "Undated (or date not known) . . . Prize medals; varied sizes," we find the following entry: "Cambridge University: the Sir William Browne medal for medicine." [23] As in the previous instance, some emendation is obviously necessary. Suffice it to say, that there was no such thing as a Browne medal for medicine. Since William Wyon was born in 1795, this discovery in no way affects the attribution of the first medal, but was the die which he engraved merely a replacement, necessitated by wear, of Pingo's original, or was it an entirely new conception based on the same specifications but probably differing in details? [24] Furthermore, was our

been conceived and used. It is also highly doubtful that Sir William would have overlooked a golden opportunity to call attention to a medal struck in his honor. And last, but not least, there would have been no symbolical significance in the use of such a reverse scene in connection with his election to office. Storer lists this wax model, but in a very ambiguous manner, further complicated by errors. As No. 501, following his already erroneous description of a sort of composite piece, he says "There exists a wax model of the reverse slightly differing from the above." He then cites as reference, Forrer, I [*sic*], p. 559.

[23] VI, p. 685.

[24] One of the more fascinating aspects of the Browne medal is the fact that explicit instructions for the design were laid down by the donor, and it is, naturally, of especial interest to note how well or how closely these instructions were adapted by the engraver. Little variation would be possible if Sir William's design were followed to the letter. No such limitations seem to have been placed on creative genius in the case of the "Chancellor's Classical Medal," established by Thomas Holles Pelham, Duke of Newcastle, soon after his appointment as Chancellor in 1748, and first awarded in 1752. This medal, the work of Richard Yeo, was supplanted under the succeeding Chancellor, Augustus Henry Fitzroy, Duke of Grafton, who took office in 1768, by a completely different creation from the hand of John Kirk. While a still later Chancellor's Medal by William Wyon bears no relation whatsoever to its predecessors. Cf. Searle, *The Coins, Tokens and Medals of Cambridgeshire*, pp. 28-9, nos. 5-7, and for Yeo's medal see also, Franks and Grueber, *Medallic Illustrations of the History of Great Britain and Ireland*, II (London, 1885), pp. 667-8, no. 377. It seems highly probable that the adaptability of Sir William's design was due in great measure to the fact that it was not entirely original. Certainly, he must have been familiar with Yeo's and Kirk's productions for the Chancellor's series. On the former, Cambridge, with mural crown, is seated on a raised platform, her hand outstretched toward a group of students standing at left, to one of whom her companion "Liberality" is presenting a medal. In Kirk's rendition, according to Searle, "a female figure holding a lyre in her left hand, [is] placing with her right hand a wreath on the head of a student in academic costume." It would seem that Sir William's design was a variation on a theme.

unsigned piece struck from one of these dies, or was it from another die by still another engraver?

When luck seemed about to run out, a final search was amply rewarded by the discovery of a monograph, which had hitherto escaped notice, and which, it seems certain, is not widely known. Entitled, *The Coins, Tokens and Medals of the Town, County and University of Cambridge*, by William George Searle, M. A., Vicar of Rockington, Cambridgeshire, and Late Fellow of Queens' College, it was printed in 1871 for the Cambridge Antiquarian Society (Octavo Publications, no. XII). In the preface (p. viii), the author points out that "This list must be understood to be mainly a compilation from materials already published. . . ." Just where the material was published is, alas, never indicated. Be that as it may, two Browne Medals are listed (p. 29):

8. *Obv.* ESSE ET VIDERI. Head of sir William Browne; beneath it, in two half circles: D. GULIELMUS BROWNE. EQUES. NAT. 3. NON. JAN. A.S. MDCXCII.

   Rev. SUNT SUA PRAEMIA LAUDI. Apollo seated places a wreath on the head of a student, who is kneeling and holds a scroll in his hand. In the exergue, ELECTUS COLL. MED. LOND. PRÆSES A.S. MDCCLXV. Engraved by Pingo.

   Gold. Value 5 guineas.

9. The same, engraved by W. Wyon, R. A.

Though leaving several important questions unanswered—he neglects to mention the lyre and its position, the number of lines in the reverse inscription, and the size—Searle thus verifies the existence of these two types of Browne Prize Medals, or, more exactly, of two dies. Though there is no evidence that these pieces were signed—and Searle distinctly mentions signatures in his descriptions of some of the medals which he lists—the rather odd reference to "W. Wyon, R. A.," which is a characteristic form of Wyon's medallic signature, suggests the likelihood of a medallic origin. Though Thomas Pingo generally signed "T. Pingo f.," the simple "Pingo" is known,[25] and if Searle's reference to the medallist was merely an attribution, it might be expected that he would have included the personal name to differentiate between Thomas and Lewis. But since Searle's description was probably taken from another written source rather than from the actual medals, the omissions and the errors, if any, may not be due to him.

This might also account for the failure to designate the number of lines

[25] E. g., the Medal of the Society for Promoting Arts and Commerce, 1757. Cf. Franks and Grueber, *Medallic Illustrations . . .*, II, p. 684, no. 401.

in the reverse exergual inscription, which is rather peculiar in that the number is specified for the obverse. Though admittedly a minor detail, it is of interest and could be of some importance, since Sir William suggested a division into two lines, whereas three lines are employed in our known unsigned type. It is doubtful, however, whether Sir William's instructions could have been carried out in this instance, for two lines would have been exceedingly cramped, whereas three can be neatly and symmetrically spaced. There is another discrepancy between Sir William's design and Searle's description so microscopic as almost to escape notice, but which, nevertheless, demands comment, in view of the fact that another instance of the same difference may throw some light on Searle's source, and possibly even Pingo's medal, if Searle's reading should, after all, be correct. In his description, Searle gives the date of Sir William's birth as JAN. A.S. MDCXCII, while Sir William prescribes JAN. A I. MDCXCII, in contrast to the A S. MDCCLXV, for the date of his election to the presidency of the College of Physicians given on the reverse. Though it might well be considered characteristically fussy or even a mark of his eccentricity, Sir William's differentiation between the Julian and the Solar Calendar (*Anno Julio* and *Anno Solario*) is quite correct, the change having occurred in England between 1750 and 1752. The two forms, A.I. and A.S., appear on the respective faces of the unsigned medal, but another instance of the error can be recorded. The incorrect combination of A.S. with the year of birth is to be found in Adam Wall's extract from the will, which he says was "Copied from a copy in a book of the vice-chancellor's." [26] Since it is too much to believe that Wall and Searle, or their respective printers, individually made the same mistake, we are forced to conclude either that Searle copied from a copy, or from Wall, or that Pingo received his instructions from a similarly incorrect copy, in which case Searle's reading of the *medallic* inscription may be accurate.

Unfortunately, some doubt is cast upon Searle's reading of the obverse inscription by the only other literary evidence, which we have been able to uncover. This is a "letter to the editor" of *The Classical Journal*,[27] signed by one Cantabrigiensis. He writes:

[26] *An Account of the Different Ceremonies observed in the Senate House of the University of Cambridge*, pp. 256-7. The vice-chancellor's copy may have been the product of the official copyist of the registry of the Prerogative Court of Canterbury, who, Clayton notes (*BMJ*, 1904, ii, p. 1771), in the introduction to his transcript of the Will, "omitted, *more suo*, nearly all marks of punctuation, besides occasionally changing the spelling. . . ."

[27] Vol. XII, no. XXIII, 1815, pp. 191-3.

As I perceive that the Poems, which are annually rewarded with the gold medals, left by Sir William Browne, Knt. to the University of Cambridge, are generally inserted in the pages of your Journal the following brief account of these prizes may with propriety be entitled to a place there as well.

These medals, which are three in number, are cast in the same mould. They are valued at five guineas each; and were directed to be given away annually, on the Commencement-day, to three under-graduates; the first of whom should write the best Greek Ode in imitation of Sappho; the second, the best Latin Ode in the style of Horace; and the third, the best pair of Epigrams, one of which must be in Greek, and framed after the pattern of those in the Anthologia—the other in Latin, and after the manner of Martial.

The first and second were instituted in the year 1775; the third not till the year after. Although, however, it seems to have been the intention of the founder that these medals should be given to *different* undergraduates, yet this restriction, wisely enough, seems never to have been considered as at all existing; so that any two, or all of them, may be gained by one and the same person.

On one side of the medals, which are about 4⅖ inches in circumference, is a head of Sir William Browne, in full dress as President of the College of Physicians at London. The motto round it is, ESSE ET VIDERI. At the bottom, and in two concentric circular lines,

D. GVLIELMVS BROWNE, EQVES.
NAT. III. NON. IAN. A. I. MDCXCII.

On the reverse is a figure of Apollo, seated upon a sort of tripod: his left hand rests upon his lyre; and in his right, he is holding forth a crown of laurel to the successful candidate, who is represented in his Academical uniform, and, in a kneeling posture, is presenting him with a copy of his performance. The motto is, SVNT SVA PRAEMIA LAVDI. Underneath the whole, and in three lines, are the words—

ELECTVS COLL·MED·
LOND·PRAESES A·S·
MDCCLXV.

The writer of this letter may be presumed to have carried out a little research, the opportunity for which, incidentally, we envy him. Except for the statement as to the size, which is surely a typographical error, and ought probably to read 1⅖ inches,[28] his description is clear and detailed, even to the placement of the punctuation points, so often overlooked, and could refer to the known medal, though lacking an illustration or an authentic Pingo medal we can not draw any definite conclusions, since there is still considerable room for variation. Also, what are we to make of the remark: "These medals, which are three in number, are cast in the same mould"? The uninformed often refer to all medals as struck, when occasionally some are actually cast. But we do not so often meet

[28] Grueber, *Numismatic Chronicle*, VIII, 1888, p. 251, gives the diameter as 1.4 inches.

with the converse, casting being the more unusual and unfamiliar of the two processes.

Though striking had to a great extent replaced casting in England almost a hundred years before, when machinery of French invention was introduced by representatives of the celebrated Roettier family,[29] who were for a while associated with the Mint in London, casting has occasionally and always will be employed in the production of medals. Whether any medals are known to have been cast by Thomas Pingo, it has been impossible to ascertain, but it is surely not unlikely that he would have used the process. Most intriguing, in the light of our previous discoveries, is the fact that in at least one method of casting, and the one in most common use, "The model was executed in wax and from this a mould was made . . . this mould was then stiffened . . . and when hard the metal was poured into it. The original model was in this manner not destroyed, and could be used for subsequent castings."[30] Since our original assumption that Thomas Pingo designed the first Browne Prize Medal was based on the existence of a wax model, it does not seem impossible, in the light of this contemporary report, that it served as the actual model from which moulds were made, and that the first medals were cast.[31]

There is an interesting postscript to the letter in which the writer continues:

I have often heard it objected as a defect in University and College Prizes, that, in general, there is nothing appended to them, by which the exact nature may be specified of the merit which has obtained them. In this objection there is certainly something reasonable, where *medals* are the instruments of reward, the distinction might be made, by recording upon the rim the purpose for which they

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[29] Cf. e. g., Franks and Grueber, *Medallic Illustrations*, I, p. xix.

[30] *Ibid.*, p. xii.

[31] Though purely in the realm of speculation, the time element involved in the production of the first medal, may have been a determining factor in the choice of process. It is impossible to state or even to guess with any certainty how quickly a medallist could have produced a satisfactory design, even following detailed instructions, and then engraved a die "suitable for striking medals." It took Pistrucci thirty-two years to design and engrave the Waterloo Medal (cf. Hocking, *Royal Mint Museum Catalogue*, II, pp. 207-210), but this is, of course, an inadmissible parallel, since Pistrucci devoted the better part of his time to striking for higher wages or a better contract. But that the engraving of a die was slow work must be conceded. Presuming that the executors carried out the terms of the Will almost instantaneously, and that the order was definitely placed without any delay, the artist would have had little more than six months to produce the first finished medals for delivery to the vice-chancellor by January 1, 1775. A process which would have eliminated the most time-consuming operation in the production—the engraving of the die—might obviously have been employed to advantage.

are given, the date, the name of the successful student, and that of the College to which he belongs . . . Wherever this distinction is wanting, the prize *per se*, in my opinion, loses the better half of its value.

This criticism is noted here, since, at some later date, the suggestion of making some record of the circumstances of the award was at least partially adopted. The Fitzwilliam Museum at Cambridge has one Browne Prize Medal in its collections. It is the original gold specimen awarded to Mr. Ernest Harrison of Trinity, winner of the prize for the best Latin Epigram submitted in 1899.[22] The recipient's name and the date are inscribed upon the edge.

This simple means for ascertaining the date of a medal, and in consequence the at least approximate date of the die from which it was struck, is anyway of no avail for the early pieces, which are, of course, the ones most pertinent to our problem. Specimens whose recipients could be unquestionably established from other evidence would naturally be of equal value, but the hope of locating any authenticated, or in fact any Browne Medals, has become daily more and more forlorn. It does not seem possible that all or even a sizeable fraction of the more than six hundred medals distributed since 1775 and especially of the approximately two hundred and twenty-five awarded prior to the middle of the nineteenth century should have completely disappeared. Lacking any early specimens, we can unfortunately come to no satisfactory conclusion, but the facts that have been uncovered, particularly the explanation of the small type, has certainly warranted this discussion. Moreover, it is a fairly safe assumption that the publication will immediately produce the evidence, for which we have sought in vain. Though indisputable proof will be most welcome, it is highly doubtful that any will be forthcoming which will vitally affect the conclusions which we feel can be drawn from the facts so far presented, and from some additional material acquired in our abortive attempts to locate specimens of the medals.

Having failed to acquire any information, or in some instances even replies, from the most obvious sources, an appeal was made to Spink & Son, Limited, of London, in the hope that they might have, or know of, some specimens for sale. This resulted in exceedingly generous assistance toward the solution of some aspects of the problem, even though it failed in its original intent.[23] Through their efforts it has been possible

[22] Cf. *The Historical Record of the University of Cambridge* (1917), p. 311. I am indebted to the Director, Mr. L. C. G. Clarke, for this information.

[23] I cannot express too heartily my appreciation to Mr. Forrer and the other representatives of Spink & Son for their sympathetic interest and coöperation, and through them to Mr. Pinches and Mr. Wyon for the information that they have contributed.

to trace at lease the recent peregrinations of the die from which the Browne Prize Medals are annually struck, and, in the light of what we already knew or assumed, this information is of considerable worth.

According to information received from the Messrs. Spink, the die is at the present time in the possession of Messrs. John Pinches "a well-known London firm of medallists and engravers who also incorporate Allan G. Wyon." [84] We learn from Mr. Wyon, by way of our informants, that the Browne dies "came into the custody of his father [Allan, 1843-1907] after the death of his Uncle Leonard Wyon in 1891. In all probability Leonard Wyon had the care of the dies after the death of his father [William] in 1851." Relative to the present dies, Mr. Pinches adds, "The dies are for the manufacture of a polished medal and consequently the tendency for them is to wear with use. For this reason a new pair of dies was supplied in 1932 but the size and designs were reproduced exactly to the medal that was being used at that time and no alterations whatever were made."

Though several similar replacements were presumably necessitated by wear during the course of the last hundred years, there can be no doubt that the dies for the Browne Prize Medal, which have been in the custody of the Wyon family for three generations, were engraved originally by the most distinguished member of that family. Certainly Apollo can only be from the same hand as the celebrated cadaver on the Cheselden medal, the hand of that master of anatomy, William Wyon, R. A. There can also be little doubt that Wyon adhered closely to Pingo's original adaptation of Sir William's specifications, but that there was room for considerable variation is amply attested by his son's lifeless rendition of the same scene on the smaller die which he engraved in 1858. Though the year in which William Wyon engraved his die is not definitely known, it is certainly no later than 1830, the date of Lewis Pingo's death, and may be some years earlier.[85] On the analogy of the Wyon family's custody of

[84] We quote from Messrs. Spink's letter. For Allan Gairdner Wyon (1882-), a contemporary sculptor and medallist, see Forrer, VI, p. 580, and VIII, p. 293.

[85] Since the earliest reference to a replica of the gold medals, and they seem incidentally to be almost as rare, is, as far as we know, that by Eduard Rüppell, in his supplement to Duisburg (as cited in note 15 *supra*), we believe that they must have been struck at the same time as replicas of the smaller die, possibly at the time that that die was discarded, 1868. We know of only two replicas of Leonard Charles Wyon's medal, both of bronze: one in the Army Medical Museum, the other in the Museum of the Royal Mint, along with the die. A silver replica of the larger medal by William Wyon is described by Rüppell, while there is a bronze specimen in the British Museum (described by Grueber), one in the Army Medical Museum in Washington, and two in the Jacobs Collection.

the later dies, it is reasonable to assume that the original die or model, whichever process was employed, remained in the possession of Lewis Pingo, who would have supplied the three medals annually to the Vice-chancellor. Upon Pingo's death or retirement, Sir William's executors or their successors, " charged with the perpetual performance of the bequest," were forced to seek another source of supply. Their choice was a happy one. William Wyon and his descendants assumed the responsibility. We trust, *in perpetuum*.

DR. JOHN MORGAN'S REPORT TO GENERAL WASHINGTON, MARCH 3, 1776

While searching through the Manuscripts Division of the Library of Congress for information concerning a certain regimental surgeon in the Revolutionary War, Lt. Eleanor Fair USNR (W) came across a report which Dr. John Morgan submitted to General Washington on March 3, 1776, in the course of his duties as Director General of the medical department of the American Army. Lt. Fair has sent a photograph of the original document, which to the best of our knowledge has not hitherto been published. It is direct evidence of the lack of cooperation which Morgan met from the regimental surgeons and of the scanty equipment of the colonial forces.

The difficulties in the medical department of the Army stemmed from the very beginning of the war when the Provincial Congress in Massachusetts failed to provide for a centralized organization of medical facilities. The early engagements in Massachusetts, prior to Washington's appointment as Commander-in-Chief, were fought by New England militia regiments, and the wounded were cared for in private houses by the regimental surgons and their mates who were appointed by the regimental colonels. General hospitals were created in towns like Cambridge, Charlestown, and Watertown when it became evident that more medical facilities were imperative. Such hospitals were staffed by local men, and the physicians in charge were instructed "to draw on Congress for supplies." The Provincial Congress of Massachusetts appointed various committees to furnish supplies and to obtain surgeons for the hospitals, but such a loose organization proved to be most unsatisfactory. Each detail, whether it be the provision for the examination of surgeons or the establishment of a new hospital for cases of smallpox, was taken up separately by the Provincial Congress.

When the Second Continental Congress took over the leadership in June, 1775 and Washington was named Commander-in-Chief, the need for a coordinated medical department with a director was evident to all. On July 21 the Continental Congress passed a resolution for the establishment of a "Hospital," as the medical department was then called, to be headed by a Director-General and Chief Physician who would be directly

responsible to the Commander-in-Chief. Unfortunately no mention was made in the resolution about the relationship between the Hospital and the regimental surgeons. As it worked out in practice, the Hospital with its surgeons, mates, apothecary, storekeepers, nurses, and other personnel was mainly concerned with establishing and equipping general hospitals where the sick or wounded were to be sent when conditions were such that the regimental surgons could not properly care for them, and the regimental surgeons had really no position in it. This arrangement was directly copied from the British Army. Higher salaries were paid to Hospital than to regimental surgeons, a circumstance which obviously tended to increase ill feelings. The first Medical Director, Dr. Benjamin Church of Boston, faced innumerable difficulties, and his subsequent court-martial and imprisonment for corresponding with the enemy were a severe blow to the prestige of the position.

As his successor, Congress on October 17, 1775 appointed Dr. John Morgan, the distinguished Philadelphia physician who ten years before had founded the first medical school in the colonies. When Morgan came to Cambridge, he at once began to eliminate the abuses which had already crept into the medical department. The regimental surgeons did not like to send their patients to the general hospitals and had frequently set up their own, for which they were drawing expensive stores. Morgan limited them to the bare essentials such as " Indian meal, oatmeal, rice, barley, molasses and the like," and ordered that sick men who required other foods should be sent to the general hospitals. He undertook also to examine all the hospital surgeons and their mates, as well as those of the regiments, in order to ascertain their qualifications for their positions. His chief task, however, was to procure the necessary medical and surgical supplies for the medical department. He collected enough old linen, lint and sheets to make bandages and tourniquets to supply six hospitals, in the event of an engagement with the enemy. Then he gave orders to the regimental surgeons that they should report on the extent of their supplies. His report to Washington of March 3, 1776, reproduced here, shows the information which he obtained from them.

As Morgan remarks in his report, many of the surgeons paid no attention to his request for information. Out of 36 regiments in the vicinity of Boston at this time, the surgeons of only 24 or two-thirds of the total responded. Their reports are pitiful. For two-thirds of an army of 18,410 officers and men there were only 6 sets of amputating instruments, 21 cases of pocket instruments, 2 cases of lancets, 12 cases of crooked needles, 859 bandages, about 100 old sheets, about 12 pounds of lint, 24 tourni-

quets, 2 cases of knives, and only one surgeon, Dr. William Magaw, was well provided with medicines! All of the instruments were the private property of the surgeons. The general hospitals, of course, possessed additional equipment which had been collected by Morgan, so that the over-all picture is not quite so dark. As Morgan notes in this report, he had not yet prepared his estimate of the medical and surgical supplies which each regiment should possess.

On March 4, 1776, the day after Morgan's report was sent to Washington, the Continental Army proceeded to attack the British forces in Boston. American troops in Roxbury and Cambridge already commanded strong positions, and when Dorchester Heights was seized and fortified, General Howe was forced to evacuate the town. Shortly thereafter the bulk of the American Army marched to New York.

Morgan's troubles as Medical Director never ceased. In spite of all his efforts to secure supplies and bring order to the situation, the regimental surgeons continually complained that he hoarded equipment in the general hospitals which they urgently needed. Eventually, on January 9, 1777 Morgan was dismissed by Congress without a hearing.

GENEVIEVE MILLER

Report of the several Returns made by the different Regimental Surgeons, of their Instrumen
Bandages, Lint, Rags, Medicines &c agreeable to the Gen[l] Orders of [illegible] 25 1776. to day.
N.B. all the Instruments &c are private property. Some have made no Return

Surgeons Names	Regiments	amputating Instrum[ts]	Pocket Do	Lancets	Cupping Glasses	Bandages & Towels	Lint	Tourniquets	Razors	Medicines
John Hannam S.	Col. Sargents 16th	1 Set	1 Case	2 Cases	2 Cases	40 Rolls			1 Case	
Silas Holmes Mate						48	1 lb	24		
Amos Ingraham S	Lt Col Learneds		1 Do			10	1			
Wm Fletcher S	Col Robertsons		1 Do				1 lb			but few
Wm Rogister mate	Col Webbs		1		1 Do					
Wm Rustler S	Col Knox	1 Do	1		1 Do	96				
Caleb G Adams S	Col Poors	1 Do bad	1		1 Do	16				
David Townshend S	Col Whitcombs		1 Do		1 Do	30	1 lb		1 Do	3 lb of each
Elephalet Downer S	Col Bucktons				1 Do	16	1 lb			
Isaac Spafford S	Col Nixons	1	1		1 Do	6	1			a good Supply.
Wm Magaw S	Col Brandts	1	1							
Silas Fay S	Col Bellas		1			32 rolls Lint				
Josiah Perkins S	Col Longleys		1							
John Spalding S						20				
Sam[l] Adams S	Col Whitneys		1			84 Rolls Linnen	1 lb			but few
Samuel Fleming S	23 Reg		1		1	60	½			
John Hart S	Col Prescotts		1		1	30				
Wm Burtlee mate	Col Wards					100	3			
Mr Adams mate	Col Readys					30	1 lb			
Hyman Werth S	Col Hutchinsons		2		1	48	1 lb			
Josiah Lord S	Col Mitchells		2		1	21 Rolls Lint				
[illegible] Briggs S	Col Nixons	1	1		1	200	2 lb			
John Archer	Col Bonds		1		1	15	½			
Mr Green			1			18				
	Col Whitcombs	I have not the return.								
		6 Sets	21 Cases	2 Cases	12 Cases	859 Bandages & all the Towels	24	2 Cases		

John Morgan

N.B. the above I would remark that many of the Surgeons have paid no Attention to the Gen[l] Orders, in neglecting to bring in their Returns — That in general they are but meanly furnished with Instruments, Bandages, Lint, Rags &c — & much worse with Medicines, some having none at all & most but a few —

A Return of the Surgeons Mates of Brig[r] Sullivans Brigade, examined agreeable to Orders &c

Isaac Spafford S[r] of Col Nixons — approved
Caleb G Adams S of Col Poors — Do — but means to quit the Place
Mr Green } of
Mr Jeffs } of Starks — both sick — therefore not yet examined
Mr Parker } Mates — approved
Nath[l] Bread } Mates — approved
Nath[l] Ramsay Mate — not qualified
on Mate — declines Examination, as his name is not mentioned [illegible] John Morgan

I have not yet had leisure to make out a List of Inst. Bandages, Med[s] necessary for each Reg[t] but shall do it
I have given Directions in what manner the Surgeons are to apply for the Reg[l] Surgeons of Brigades &
would beg a few Minutes Conference with his Excellency Gen[l] Washington on the above Subject — respectfully
John Morgan

March 3. 1776

NOTES AND COMMENTS

MYSTERIOUS DEATHS IN HISTORY
EUSEBIO VALLI'S CASE

SATURNINO PICAZA AND MANUEL VILLAVERDE

The rumor that the bold researcher, Eusebio Valli, professor in Italy, died a victim of yellow fever has been accepted as the truth by nearly all the authors who mention the incident. Even one of us (Villaverde) was once included in the garrulous crowd. Nevertheless, as Pope said, "To err is human, to forgive divine," forgiveness must be granted by our keen critics for an error thus confessed.

When Doctor Valli came to Habana in September 8, 1816 from New York, he devoted himself upon his arrival to making connections with official and professional people who might help him in his proposal to study yellow fever. It seems that he intended to pursue an experiment similar to the one he had formerly conducted in lands of the Old World on plague, which he had contracted and which had brought him close to death.

Twelve days after his arrival he visited San Juan de Dios' Hospital accompanied by Doctor Antonio Mendoza. They found only one patient there suffering from yellow fever. But we can best let Doctor Tomas Romay [1] describe to us, in his own words, what happened there from the beginning to the very end:

> Doctor Valli looked at him [the sick man in the hospital] and was surprised. He saw the black and putrid blood running from the mouth and other organs; observed the body colored with a dark jaundice; recognized the disorganization of the different systems composing the organic life; counted the pulse, and then a copious and cold sweat froze his own hand. At that time, the phlegmatic physician who within the contagion in the capital of Turkey said to Kalogera: "I won't go back, I'll wait for plague and even for death"; the same one who wrote to Moore what I had copied before ["being sure of the contagious character of yellow fever, it is my purpose to inoculate myself with the sweat of the dying or the bile of the corpses . . ."] and who came from the North of France to the most occidental of the Antilles Islands to inoculate himself with black vomit, at the very moment when he found it he became frightened and fearfully retired asking for some vinegar with which to wash to prevent himself from becoming sick. Nevertheless, his love for Humanity stifled the love for his own safety and he went back to the Hospital the next day, looked for the sick man and found him in a bier . . .

[1] In Don Tomas Romay's *Complete Works.*

. . . Valli . . . went away from that House of Pity bearing the horrible image imprinted in his mind. He entered his boarding house saying that he was infected with yellow fever. The next day in the afternoon they called for me, and I saw imprinted more in his soul than in his body the less confusing mortal characteristics. He was pale, frozen, lifeless; his speech incoherent and interrupted with sighs. "My fate is inevitable," he told me with hesitating tongue, "I am dying . . ." Vainly we applied all resources of science and consolations of the kindest friendship; the help of Religion, even divine was not enough to reanimate his soul which was exhaled the third day of sickness . . .

And now a very important footnote added to the end of the account:

It was said that Doctor Valli became contaminated when he put on a sweaty shirt of a sick man. Neither he nor one of his assistants told that to me, nor did I observe [in Valli] any of the three symptoms so closely related to the sickness which is well known by two of them, *yellow fever* because of the jaundice, or *black vomit* because of the atrabiliary vomiting; hemorrhages are not less frequent. Never did I see the disease end within the third day after the onset; on the contrary, then occurs an intermission of fever and the rest of the symptoms for eight or ten hours, this being a characteristic which distinguishes yellow fever from other fevers.

After reading the foregoing paragraphs, is our statement of Valli's death from yellow fever as certain as before?

Valli himself spread the news. Afterwards, the Sociedad Económica confirmed his assertion by pointing to a footnote on page nine of the January 31, 1817, issue of their review *Memorias* as follows: "he came to study black vomit from which he died." Furthermore, on his headstone they wrote:

Here lies
Doctor Eusebio Valli,
a victim of his love for Humanity:
the Economical Society of Habana
honors his memory.

Now let us analyze Romay's account.

The first symptom pointed out was the cold and copious sweating which froze Valli's hand. The second one, the fright which compelled him to flee from the Hospital. The next day he fell sick, but we do not know his complaints at that moment. We know only that one day later Romay visited him and found him pale, frozen and lifeless; sighing, and incoherent in his speech; the mortal signs imprinted more in his soul than in his body. In his footnote Romay denies having seen any of the symptoms of yellow fever, even the normal course of such a serious sickness. On the contrary, he drew a picture which does not properly correspond to an infectious

process, in the sense of an infection like yellow fever. In Valli's illness we met the following features: first, horror and sweating, i. e. extreme anxiety; second, a predominance of subjective symptoms but also the pale color, the freezing rigidity, the faintings and extreme weakness, sighing and incoherent speech; and third, the rapid course which ended fatally within the third day.

That is to say: even Valli believed he was a victim of yellow fever, and even the authors followed his assertion. Trusting Romay's words, we deny emphatically this statement.

Does the clinical picture of Valli's disease agree with the clinical picture of yellow fever? The onset of yellow fever is characterized by hyperthermia, chilling, and pains in several parts of the body. Valli showed none of these symptoms. He had neither a red face, on the contrary it was pale; nor the fever, on the other hand, coldness; nor the icterus, the hemorrhages, or the remission of the third day which was the day of his death.

If black vomit was not the fatal disease, what was it? Considering two important facts—plague and emotional shock—our diagnosis may be very close to the real one. The heart of the dead from plague is often hypertrophied and its fat degenerated, which as a consequence, might produce in survivors a chronic myocarditis, as most myocarditis follows infective diseases. Valli could have suffered from a chronic myocarditis, even without symptoms, following an attack of plague. Acting upon it, the emotional shock could be the impulse to an arrhythmic cardiac crisis, namely a paroxysmal tachycardia, an auricular fibrillation or a flutter.

Symptomatology is closely related in all these arrhythmias: extreme anxiety, generally with oppression and palpitation, intense weakness, fearfulness, pallor of the face and copious sweating of the body. Mental ailments seldom occur. Symptomatology and prognosis are generally aggravated according to the myocardial condition. These arrhythmias constitute what we could name the final chapter of many heart diseases. We believe this is the " clinical history " which better agrees with Romay's account—fearfulness, anxiety, sweating, paleness and the tragic end. This is the case: after suffering from plague Valli remained with an affected myocardium (with or without symptomatology, we do not know), and as a consequence of a great emotion he suffered a crisis of arrhythmia, not well borne because of the bad cardiac muscle.

One other possibility is to diagnose cardiac infarction or coronary thrombosis. Nevertheless, it is difficult to accept such an illness occurring in a man in his forties and in the absence of the common sharp pain. During the infarction's crises there is collapse or shock, intense paleness, lavish

sweating, anxiety and fearfulness. When the crisis kills, it kills rapidly or in less than four days, that is why we cannot disregard this eventuality, but arrhythmias stand in the first place. The following diagnoses are still less acceptable.

Left ventricular failure presents similar signs, but instead of pallor of the face we see cyanosis. Anxiety may be very intense too. Sometimes the sickness which killed Valli resembles mental confusion, but in this case the mental symptoms were not very conspicuous, as they consisted merely in anxiety, sighs and incoherent speech.

Fever accompanies septicemia and it is possible to mistake its onset with that of yellow fever. Even though we know that in Valli's case there was no fever, we must not forget that a very serious infection may kill in a few days and collapse may cause hyperthermia to vanish.

To name all possible diagnoses, in a long endless list, would be annoying to our readers and would be unmindful of Horace's advice, which we hope we have kept: " say in the right moment what must be said in the right moment." We shall therefore let the foregoing remain as said and only add the following summary.

Valli's death was attributed to yellow fever. When he became ill, he believed it was yellow fever that ailed him. The members of the " Sociedad Económica " and afterwards all the authors who mention the incident were agreed on yellow fever as the cause of his death. Valli was cared for by Doctor Tomas Romay during his illness, and from the latter's funeral speech we can surmise that his diagnosis was not yellow fever.

In the clinical picture we see the signs of a very serious arrhythmia (paroxysmal tachycardia, auricular or ventricular fibrillation or flutter). We consider coronary thrombosis as another possibility. Left ventricular failure, mental confusion, septicemia, etc., are less likely.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

The response to the preliminary announcement of the Annual Meeting of the Association at Atlantic City on May 26 and 27 has been very great. On Sunday, May 26 the Council meeting, which is open to all members of the Association, will begin at 3 P. M., and the Benjamin Rush Symposium with Dr. L. H. Butterfield of Princeton, N. J. and Dr. Fritz Wittels of New York participating will take place at 8 P. M. the same day. On Monday, May 27 the program will include some 20 short papers in addition to a short business meeting, presentation of the Osler medal for the best student essay, the Garrison Lecture presented by Dr. John F. Fulton of New Haven, Conn., and the after-dinner speeches by Dr. Joseph H. McNinch of Washington, D. C. and Dr. I. S. Ravdin, Philadelphia, on medical aspects of World War II.

CONSTITUENT SOCIETIES

The Johns Hopkins Medical History Club, Baltimore, Md.

The Club held its last meeting of the year on Monday, April 22, 1946 at the Institute of the History of Medicine, 1900 East Monument St. New officers who were elected at the beginning of the meeting were Dr. George W. Corner, President; Dr. Sanford V. Larkey, Vice-President; and Dr. Owsei Temkin, Secretary and Delegate to the American Association of the History of Medicine. The following program was presented:

"The Influence of Medicine on Ancient Philosophy." Dr. LUDWIG EDELSTEIN

"Experiences as Medical Historian of the European Theater."

Dr. SANFORD V. LARKEY

NATIONAL NEWS

The Medical Library Association held its 45th annual meeting in New Haven, Connecticut, March 25-27, 1946. Headquarters were at the Hotel Taft and sessions met in the Historical Library, Sterling Hall of Medicine, Yale University. The program featured reports on the Army Medical Library, a symposium on International Cooperation and addresses on Training for Medical Librarianship and British Medical Libraries in Wartime.

The following officers were elected: President, Dr. Walton B. McDaniel, 2d, College of Physicians, Philadelphia, Pa.; Vice-President, Dr. C. Abbott Beling, Newark, N. J.; Secretary, Miss Heath Babcock, New York Medical Library, Albany, N. Y.; Treasurer, Mr. Jurgen G. Raymond, New York Academy of Medicine, New York, N. Y.

It was voted to hold the 1947 convention in Cleveland, Ohio, the exact date to be determined later.

New York

An exhibition of the history of medicine in art was held at New York University College of Medicine from April 15-27, 1946. The prints used in the exhibit were selected from the collection of more than 1000 medical prints owned by Dr. Clements C. Fry of Yale University School of Medicine, many of which he acquired from the collection of Dr. Eugen Holländer whose books *Die Medizin in der klassischen Malerei, Die Karikatur und Satire in der Medizin*, and *Plastik und Medizin* are basic studies in the relationship between art and medicine. The exhibition included several 15th century woodcuts showing faith cures, works by Lucas van Leyden, Pierre van der Borcht, van Ostade and Rembrandt, caricatures by Rowlandson and Woodward representing 18th century medical satire, 19th century prints by Daumier, Biolly and Cruikshank, and contemporary art which has some bearing on medicine.

Dr. Miriam Drabkin has joined the firm of Henry Schuman, Publisher, as Assistant Editor of *The Journal of the History of Medicine and Allied Sciences* (a quarterly which began publication in January 1946) as well as adviser on the technical aspects of forthcoming Schuman publications. She is a graduate of Cornell University, where, in 1938, she received the Ph. D degree for work in Literary Criticism and Ancient Literature. In 1938-40 she was a Fellow at the American Academy in Rome, where she studied at the Vatican School of Paleography, and was at the Institute of the History of Medicine at Johns Hopkins University from 1941-43. Dr. Drabkin has published articles on Ancient and Medieval Medicine, and has done free-lance editing of works in the fields of the history of medicine, literary criticism, and political science.

Lewis F. Thompson is now with Henry Schuman, Publisher, to assist in the publication of the extensive series of books for teen-age readers portraying the history of the sciences, through the biographies of significant figures in the various fields. Mr. Thompson was formerly in charge of publicity for Alfred A. Knopf, and, before his service in the Merchant Marine during the war, was on the staffs of the New York Public Library and the Newark Public Library.

Philadelphia

The Northern Medical Association of Philadelphia, founded in 1846, is the second oldest medical society in Philadelphia, the College of Physicians of Philadelphia being the oldest. This year marks the centenary of the Association which will be celebrated on December 5, 1946. A historical committee has been appointed, and a general Centennial Anniversary Committee under the chairmanship of Dr. Maurice S. Jacobs is making arrangements for the centennial celebration and banquet. A historical souvenir booklet will be prepared for the occasion. Dr. Meyer Solis-Cohen, Assistant Director of Health of Philadelphia, is president. Among the past presidents are the late Dr. David Riesman, Dr. Jacob Solis-Cohen, pioneer American laryngologist, and the late Dr. Charles K. Mills, noted Philadelphia neurologist.

Dr. Hyman I. Goldstein, Camden, N. J., was president in 1939 and is serving with Dr. Maurice S. Jacobs on the historical committee. At the regular annual dinner meeting in March, Dr. Goldstein presented to the Association early memorabilia and autographs of the first members in 1846-1847 to the years 1910-1911.

Dr. Richard H. Shryock, Professor of American History at the University of Pennsylvania, who is well known for his book *The Development of Modern Medicine* and his numerous contributions to the history of American medicine and science, will conduct a course in the Summer Program in American Studies at the University of Minnesota this summer.

NEWS FROM ABROAD

England

Mr. W. R. LeFanu, Librarian of the Royal College of Surgeons of England, has just published a bibliographical checklist of the works of John Hunter: *John Hunter, A List of His Books*, Printed for the Royal College of Surgeons of England at the University Press, Cambridge, 1946, 31 pp. This useful publication gives the location of copies of the various editions in leading medical libraries in the British Isles, Canada, Australia, Holland, France, and the United States.

France

Mme. Hélène Metzger Brühl

We regret to record that the death in the extermination camp at Auschwitz must now be presumed of Madame Hélène Metzger Brühl, a learned historian of science and treasurer of the Académie Internationale d'Histoire des Sciences. Born in 1889 at Chatou (Seine et Oise) she graduated at the Sorbonne, specializing in crystallography and general chemistry. Her husband, Paul Metzger, professor of history at Lyons, as well as her eldest brother, fell in action in the First World War, and her younger brother, Francis, died in 1941. Thus of these gifted brethren the only survivor is M. Adrien Brühl, of the French School of Archæology at Rome.

Hélène Metzger turned early to the study of the history and philosophy of science. She was an active member of the Section d'histoire des sciences of the Centre internationale de Synthèse in Paris. When the Académie Internationale d'Histoire des Sciences was founded in 1928 as organ of the International Committee for the History of Sciences, Hélène Metzger's name was fourteenth on the list. In 1931 she succeeded Prof. Sigerist as its treasurer. In 1934, after the Nazi dismissal in Germany of Jewish members of the Academy, a large group of members led by the president of honour, Sir Frederic Kenyon, announced that in no circumstances would they attend a Congress in Germany. Hélène Metzger was among those who initiated this decision and was marked for vengeance. After the German occupation of France the Gestapo tracked her from her home in Paris to a little *pension* at Lyons where she was writing hard. She was carried off to the fortress of Montluc and thence to the concentration camp at Drancy. Fellow victims who have survived testify to her courage and cheerfulness during these months. She was one of a convoy taken from Drancy to the extermination camp at Auschwitz.

Of Hélène Metzger's books, the best known are "Les Doctrines chimiques en France du début du XVII^{e} à la fin du XVIII^{e} siècle," and "Les concepts scientifiques," both of which were *couronné*—the former by the Paris Academy of Sciences while the latter won the *Prix Bordin* of the Academy of Moral and Political Sciences.

" Les concepts scientifiques " is perhaps her most striking contribution. Contemplating—to use a phrase of M. Lalande who contributes a preface to the published volume—" the natural history of scientific thought," she analyses the parts played respectively by analogy; by concepts of permanence (conservation) of matter; by concepts of evolution, parallel, divergent or convergent; and by what she terms scientific nominalism, leading to abstractions by elimination (*épuration*) or by indetermination.

Her most important evidence for building the 'natural history' is taken from the field of seventeenth and eighteenth century chemistry, which she had made peculiarly her own. While earlier thought, of course, contributes illustrations to the section on analogy, the emphasis is on those to whose writings we can turn to test the classification proposed, and this enhances the value of the study.

A stream of historical studies mostly contributed to *Isis* or to *Archeion* followed this volume. Hélène Metzger was always concerned in tracing the psychological implications of the growing body of scientific knowledge. She was no less steadfast when the question of principle arose as regards relationship with the Nazi Government. In her last hours there must have echoed in her mind those words of another such victim, " Perhaps ye who condemn me are more fearful than I."

CHARLES SINGER.

Switzerland

The Bern Section of the Swiss Society of Philosophy and the Swiss Society of the History of Science and Medicine will hold a joint meeting in the Botanical Institute at Bern on April 11-13, 1946. The general subject of the meeting will be " Unity and Method in Science." The program includes the following addresses:

" Discours d'Introduction " by André Mercier (Bern)
" De l'unité et de la méthode dans les sciences " by Arnold Reymond (Lausanne)
" La vie de l'esprit dans les mathématiques " by Rolin Wavre (Geneva)
" L'application des mathématiques aux autres sciences " by Ferdinand Gonseth (Zurich)
" Die Methode in der Physik " by Hans König (Bern)
" Die Beziehungen zwischen der Physik und der Biologie " by Friederich Dessauer (Fribourg)
" De la méthode en biologie " by William Schopfer (Bern)
" Objekt und Methode in der Biologie " by Fritz E. Lehmann (Bern)
" Du rapport des sciences avec la philosophie " by Jean Piaget (Geneva and Lausanne)

BOOK REVIEWS

OWSEI TEMKIN. *The Falling Sickness. A History of Epilepsy from the Greeks to the Beginnings of Modern Neurology.* Baltimore: The Johns Hopkins Press, 1945. xv + 380 pp., illustrated. $4.00.

Owsei Temkin's history of epilepsy, entitled "The Falling Sickness," is in every sense of the term a magnificent work. It is big in size (380 pages), copiously annotated, with a bibliography of 706 items, and a name as well as a subject index. The text reads easily and smoothly, for which virtue, taking our clue from the Preface, we need also to credit Mrs. Temkin. But even beyond this, the book reads easily and retains one's interest because the author is so palpably the master of his subject. Temkin carries his erudition as a well-proportioned big man carries his frame, with such ease and harmony that unless one takes pains to note it, one may overlook its mass and bulk. In this book, which is no less a treatise on epilepsy in medical history than a medical history of epilepsy, the author "runs up and down the scales of medical history" with the facility of a true virtuoso. The result is an interesting, instructive and provocative work.

The provocation runs throughout the book. Its basic motif is an inquiry, which, framed in words, runs somewhat as follows: *Why so much ado about epilepsy?* We know so little about epilepsy; we know so much about other diseases, why write the history of an unfinished business? Yet on this very score we note the meaningful fact that epilepsy has, for more than two thousand years, engaged the interest of many and able men. Clinicians, philosophers, theologians, learned and illiterate laymen have all, in their singular ways, dealt with the subject of epilepsy. The number is so great and the interest so persistent that in the end one cannot fail to appreciate how much converges in and about the subject of epilepsy. Therein is the cardinal interest of the matter. And on this score one particular point: the history of this disorder (which is indeed of many kinds) presents the spectacle of an agelong duel between the protagonists of *soma* and those of *psyche* for the crown of etiological pre-eminence. The issue seems to be whether it is the sick soul that sickens the body and makes it "to fall," or whether it is the sickened body that involves and drags down the soul. The issue is seldom phrased in such stark contrast, yet witting or unwitting, physicians were on one or the other side of the issue, save only those, and they were many, who were more devoted to gaining new knowledge than to taking sides.

Yet from this it must not be deduced that the history of epilepsy is the history of a polemic. There were always more immediate matters at hand, such as diagnoses, including differential diagnoses, and treatment, and these commanded the energies and interests of the physician.

The history of epilepsy begins with a doubt as to its divine origin and ends with a doubt as to its very nosological existence. "Epilepsy is not more divine than any other disease," wrote Hippocrates. There is not one but many epilepsies, wrote John Hughlings Jackson. "Epilepsy is the name for occasional, sudden, excessive, rapid and local discharges of gray matter." The entire history of "the falling sickness" is encompassed between the two, Hippocrates and Jackson, and, as we've

already indicated, it is well told by Temkin. There is no summarizing of this story, but some points are to be highlighted. Thus it is strange, as the author points out, that it has thus far "not been possible with certainty to identify epilepsy in any of the writings before the Fifth Century B. C. either in Greece or even in Babylonia and Egypt." Emphatic and valuable, since it is so often misconstrued, is Temkin's rendition of the Hippocratic position with regard to the sacredness of epilepsy. The *Sacred Disease* is not infrequently read as if it were Hippocrates' profession of atheism. The fact, however, is that Hippocrates insisted that epilepsy is not *more* divine than any other disease, and he took pains to distinguish between religious treatment and magical treatment, the former being acceptable, the latter condemned as impious.

On the whole, the physicians of antiquity had a sound empirical knowledge of the disease though they were in a maze as to its origin, and very feeble in its treatment.

The Middle Ages seemingly present the picture of a serious regression in understanding, with the cause of epilepsy being variously ascribed to possession and lunacy or to the works of the devil or demons. The cure of epilepsy is attempted by the agency of Saints and relics. Epilepsy itself becomes the "falling evil." But on this score Temkin aptly observes (p. 322): "During Antiquity, the Middle Ages and even the Renaissance, the problem had always presented itself in the form of an alternative: either somatic disease or supernatural phenomenon." Many chose the supernatural: and the psychiatrically minded physician of today will admit to more than a modicum of sympathy for the ancient medicus who would not "swallow the soma whole."

In the Middle Ages the intellectual horizon was expanding, and much of that period's "demonology" must be regarded as the terms and structures of a nascent and crude psychobiology. This is even better witnessed in the somewhat "refined demonology" of the Renaissance. Temkin treats the outstanding personality of this period, Paracelsus, with rare sympathy and keen understanding. Paracelsus had a deep appreciation of psychiatric mechanisms, even though his therapy was barbaric. Apropos, it is a pity that no really competent translation and interpretation of Paracelsian psychiatry has yet been made in English.

One-half of Temkin's book is devoted to the time span between the Hippocratic age and the end of the Renaissance. The second half treats of the period that began with the iatrochemists and iatrophysicists and terminated with Hughlings Jackson's epic works. This, then, is the enlightened period, the age of the new science. It made a brave, and ultimately successful fight, against the "supernatural and the occult." As the latter yielded ground, the crucial twin problems of hysteria and epilepsy came more clearly to the fore. The somaticists were in the ascendancy in this period, and for very good reasons. For, at this time, anatomy and physiology made most telling contributions to the illumination of epilepsy. But the problem of hysteria was a constant dissonant and disquieting factor in the somaticists' otherwise logical scheme of things. So, too, was mesmerism or hypnosis. These disquieting factors, hysteria and suggestion, were dealt with by studied neglect, or were larded in with the rest of the problem, being considered as forms of epilepsy. Hughlings Jackson adroitly evaded the issue by limiting the physicians' province to physiology alone. Temkin observes: "It is very difficult to obtain a clear picture of Jackson's ideas on hysteria." On the other hand, French authors spoke of

"hystéro-épilepsie" and maintained that attacks in a given sufferer might sometimes be hysterical, sometimes epileptic. Charcot settled this issue by separating hysteria and epilepsy. But for each he maintained definite organic central nervous system "seats of origin."

Temkin's survey ends with the work of Jackson and Charcot, and his book with the obvious notation that "the final explanation of the phenomenon 'epilepsy' is still to come." In his concluding sentence Temkin echoes the problem that has stirred the interest and passions of medical men down the ages: "Only when modern science has achieved this goal (the final explanation of epilepsy), shall we know whether the foundations laid for us by Jackson, Charcot and their successors, were truly valid, or whether we shall have to revert to a broader concept of "the falling sickness," based on a more comprehensive view of the functioning of the human mind and organism."

IAGO GALDSTON.

OTTO GLASSER. *Dr. W. C. Röntgen.* Springfield, Ill.: Charles C. Thomas, 1945. v + 169 pp. Illustrated. $4.50.

In 1945 a hundred years had elapsed since Wilhelm Conrad Röntgen had been born in a small town of the Ruhr district, and 50 since he had made his momentous discovery of the X-rays in the now destroyed city of Würzburg. The author, the publisher, and the sponsors of this little commemorative volume (the American Roentgen Ray Society, the Radiological Society of North America, and the American College of Radiology) are to be congratulated that the troubled times did not prevent them from duly honoring the important event. Dr. Glasser, an outstanding X-ray man, and the author of the standard biography of Röntgen, has done a superb job. Around a new translation of the three original papers in which Röntgen announced his "new kind of rays," Glasser has built a short, sober, and yet extremely rich biographical sketch. Röntgen's discovery was no accident, but the outcome of decades of research in "pure science." Röntgen's extreme modesty and his disinterestedness in material gains and in advertising himself have made possible the spreading of a legend of the lucky stroke of a mediocre melancholic. Thanks to the persistent endeavors of a few good colleagues and friends, e. g. Lenard, this legend took, even in Röntgen's own country. It is quickly dispersed by confrontation with the facts. The story of the true Röntgen, overcoming his educational handicaps; fascinated by pure science up to his very end; refusing nobility, and the connection between his name and the new rays; shy, but gay and human with his friends, will be of great educational value to the younger generation, and give comfort to the older one in a time when the ugly dance around the golden calf has become quite fashionable even among scientists. Röntgen's personality is given in true perspective to his work. (One shudders to think what one of the modern soul-searchers would have done with the characters of Dr. and Mrs. Röntgen.) The book contains valuable appendices (Röntgen's bibliography, a chronology, a bibliography of more recent "Röntgeniana") and is beautifully illustrated and printed. My only regret is that its price, though fully justified by its appearance, does not make for mass distribution. A book of such high educational value should have a popular edition, to counterweigh a certain "popular"

brand of literature in the history of science and medicine, with which the brains of our youngsters are now so often degraded.

ERWIN H. ACKERKNECHT.

Proceedings Commemorating the Fiftieth Anniversary of Tufts College Medical School, 1893-1943. Published by Tufts Medical Alumni Association, 1944. 118 pp., illustrated.

On a number of occasions from September 15, 1943 to May 31, 1944 the Alumni Association of Tufts College Medical School sponsored meetings and lectures to commemorate the fiftieth anniversary of the founding of the school. These occasions included lectures on medical and medico-historical subjects, the unveiling of portraits of faculty members who had served with distinction, and the Grand Assembly on October 6, 1943 which marked officially the college's anniversary. The complete proceedings of the celebrations have been published in an attractive book to serve as a permanent record for the benefit of those who attended the meetings and other alumni and friends of the school.

G. M.

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